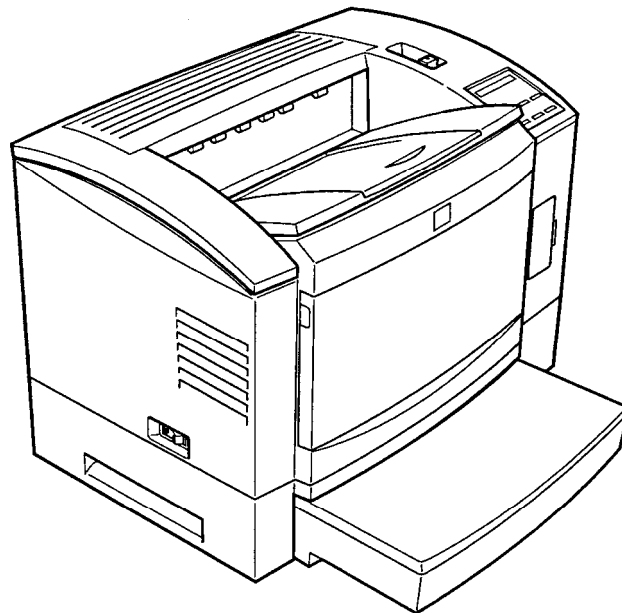


•÷Qđ/^ 0•rPĐ/Nq^ ÷rĐ/0•r

EPL-N2000

SERVICE MANUAL



EPSON

4006861

PRECAUTIONS

Throughout the text are categorized relative to 1) personal injury, and 2) damage to equipment:

DANGER Signals a precaution which, if ignored, could result in serious or fatal personal injury. Great caution should be exercised in performing procedures preceded by a DANGER headings.

WARNING Signals a precaution which, if ignored, could result in damage to equipment.

The precautionary measures itemized below should always be observed when performing repair /maintenance procedures.

DANGER

1. ALWAYS DISCONNECT THE PRODUCT FROM BOTH THE POWER SOURCE AND THE HOST COMPUTER BEFORE PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURE.
2. NO WORK SHOULD BE PERFORMED ON THE UNIT BY PERSONS UNFAMILIAR WITH BASIC SAFETY MEASURES AS DICTATED FOR ALL ELECTRONICS TECHNICIANS IN THEIR LINE OF WORK
3. WHEN PERFORMING TESTING AS DISCATED WITHIN THIS MANUL, DO NOT CONNECT THE UNIT TO A POWER SOURCE UNIT INSTRUCTED TO DO SO. WHEN THE POWER SUPPLY CABLE MUST BE CONNECTED, USE EXTREME CAUTION IN WORKING ON POWER SUPPLY AND OTHER ELECTRONIC COMPONENTS.

WARNING

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.
2. MAKE CERTAIN THAT THE SOURCE VOLTAGE IS THE SAME AS THE RATED VOLTAGE, LISTED ON THE SERIAL NUMBER/RATIG PLATE. IF THE EPSON PRODUCT HAS A PRIMARY-AC RATING DIFERENT FORM THE AVAILABLE POWER SOURCE, DO NOT CONNECTE IT TO THE POWER SOURCE.
3. ALWAYS VERIFY THAT THE EPSON PRODUCT HAS BEEN DISCONNECTED FROM THE POWER SOURCE BEFORE REMOVING OR REPLACING PRINTED CIRCUIT BOARDS AND/OR INDDMDUAL CHIPS.
4. IN ORDER TO PROTECT SENSITIVE m P CHIPS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.
5. REPLACE MALFUNCTIONING COMPONENTS ONLY WITH THOSE COMPONENTS RECOMMENDED BY THE MAANUFACTURE; INTRODUCTION OF SECOND-SOURCE ICs OR OTHER NONAPPROVED COMPONENTS MAY DAMAGE THE PRODUCT AND VOID ANY APPLICABLE EPSON WARRANTY.

SAFETY INFORMATION

This printer is a page printer which operates by means of a laser. There is no possibility of danger from the laser, provided the printer is operated according to the instructions in this manual provided.

Since radiation emitted by the laser is completely confined within protective housings, the laser beam cannot escape from the machine during any phase of user operation.

For United States Users;

[Laser Safety1

This printer is certified as a Class 1 Laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

[CDRH Regulations]

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. Compliance is mandatory for products marketed in the United States. The label shown below indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

WARNING: Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

[Internal Laser Radiation]

Maximum Radiation Power: 5.0×10^{-4} (W)
Wave Length: 790 ± 20 nm

This is a Class IIIb Laser Diode Assay that has an invisible laser beam. The print head unit is NOT A FIELD SERVICE ITEM. Therefore, the print head unit should not be opened under any circumstances.

For Other Countries Users;

WARNING: Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

This is a semiconductor laser. The maximum power of the laser diode is 5.0×10^{-4} W and the wavelength is 790 ± 20 nm.

For Denmark Users;

ADVARS EL
Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion.
Undgå udsættelse for stråling.

Klasse 1 laserprodukt der opfylder IEC825 sikkerheds kravene.

For Finland. Sweden Users:

VAROITUS
Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING
Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överstiger gränsen för laser klass 1.

For Finland. Sweden Service People

VAROITUS
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Ala katso sateeseen.

VARNING
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ei strålen.

For Norway Users;

ADVARSEL
Dersom apparatet brukes på annen måte enn spesifisert i denne bruksanvisning, kan brukeren utsettes for usynlig laserstråling som overskrider grensen for laser klasse 1.

Dette er en halvleder laser. Maksimal effekt til laserdiode er 5.0×10^{-4} W og bølgelengde er 790 ± 20 nm.

Laser Safety Labels

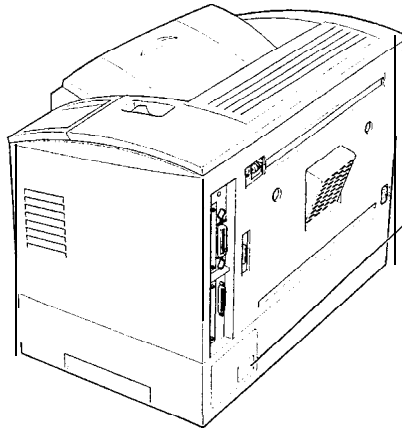
[Label on rear printer case]

A laser safety labels is attached on the outside of the printer shown below.

For United State

0:1 4p1T5w5"uAE1mmf)3"5x1 f" f<T Pww4" TM p4T
5TV/AE'5T×T)§ mēCFR
{(pw†T5^DK^1/AE□™<pw†T5^',
Q•D¶jō •+Qđ/ |đr+,
'5"UB^ 833"™T
àç" .5"UBK^ Q<"v'5'k'K^ /bp>™UT>K
'pw>
PN/ÝpN|0Ýr•'n

For Europe

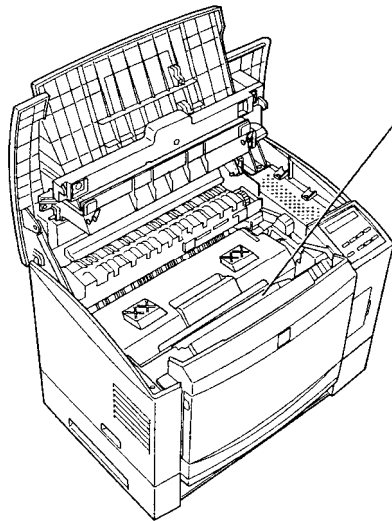


**LASER KLASSE 1 NACH IEC 825
CLASS 1 LASER PRODUCT TO IEC 825
KLASSE 1 LASER PRODUKT I.H.T. IEC 825
LUOKAN 1 LASERLAITE**

[Label inside printer]

The following laser safety label will be attached inside the printer as shown below.

For Denmark, Finland, Sweden, and Norway



CAUTION • INVISIBLE LASER RADIATION WHEN OPEN
AVOID EXPOSURE TO SEAM

**VORSICHT- UNSICHTBARE LASERSTRAHLUNG WENN
ASDECKUNG GEÖFFNET NICHT DEM STRAHL
AUSSETZEN**

**ADVARSEL- USYNLIG LASERSTRÅLING NÅR DEKSEL
ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN**

**VARO!- AVATTAESSA OLET ALTTIINA NÄKYMÄTÖN
LASERSÄTEILYLLE ÄLÄ KÄTSO SÄTEESEENI**

**ADVARSEL- USYNLIG LASERSTRÅLING VED ÅBNING
UNNGÅ UDSÆTTELSE FOR STRÅLING**

**VARNING- OSYNLIG LASERSTRÅLNING NÅR DENNA DEL
ÄR ÖPPNAD STRÅLEN ÄR FARLIG**

For Finland. Sweden Users:

VAROITUS
Laitteen käyttäminen muulla kuin " käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING
Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överstiger gränsen för laser klass 1.

For Finland. Sweden Service People

VAROITUS
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Ala katso sateeseen.

VARNING
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ei strålen.

For Norway Users;

ADVARSEL
Dersom apparatet brukes på annen måte enn spesifisert i denne bruksanvisning, kan brukeren utsettes for usynlig laserstråling som overskrider grensen for laser klasse 1.

Dette er en halvleder laser. Maksimal effekt til laserdiode er 5.0×10^{-4} W og bølgelengde er 790 ± 20 nm.

Laser Safety Labels

[Label on rear printer case]

A laser safety labels is attached on the outside of the printer shown below.

For United State

0:1 4p1T5w5"uAE1mmf)3"5x1 f" f<T Pww4" TM p4T
5TV/AE'5T×T)§ mēCFR
{(pw†T5^DK^1/AE□™<pw†T5^',
Q•D¶jō •+Qđ/ |đr+,
'5"UB^ 833"™T
àé" .5"UBK^ Q<"v'5'k'K^ /pþ>™UT>K
'pwþ>
PN/ÝpN|0Ýr•'n

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Chapter 1 Product Description

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1.1 FEATURES

The EPSON® EPL-N2000 is a non-impact page printer that combines a semi-conductor laser with electrophotographic technology. The main features are:

- | | |
|---|---|
| <input type="checkbox"/> Paper feed up to 1150 sheets (for A4 or letter-size paper): | Standard: 150 sheets for MP (multipurpose) tray 500 sheets for standard lower paper cassette Optional: 500 sheets for 500-sheet lower paper cassette unit |
| <input type="checkbox"/> High print speed: | 20 ppm in single-sided print mode for A4 or letter-size paper |
| <input type="checkbox"/> Integrated imaging cartridge: | Provides long cartridge life (10,000 sheets) and easy user maintenance. |
| <input type="checkbox"/> Optional duplex print | |
| <input type="checkbox"/> Ozone | Printing process creates no ozone gas |
| <input type="checkbox"/> High capacity output tray: | Face-down exit tray holds up to 500 sheets |
| <input type="checkbox"/> 2 optional paper cassettes for the lower paper cassettes unit: | 500-sheet cassette for A4 or letter-size paper 250-sheet universal cassette (available for up to A3-size paper) |
| <input type="checkbox"/> Power saving mode: | Conforms to Energy Star program |

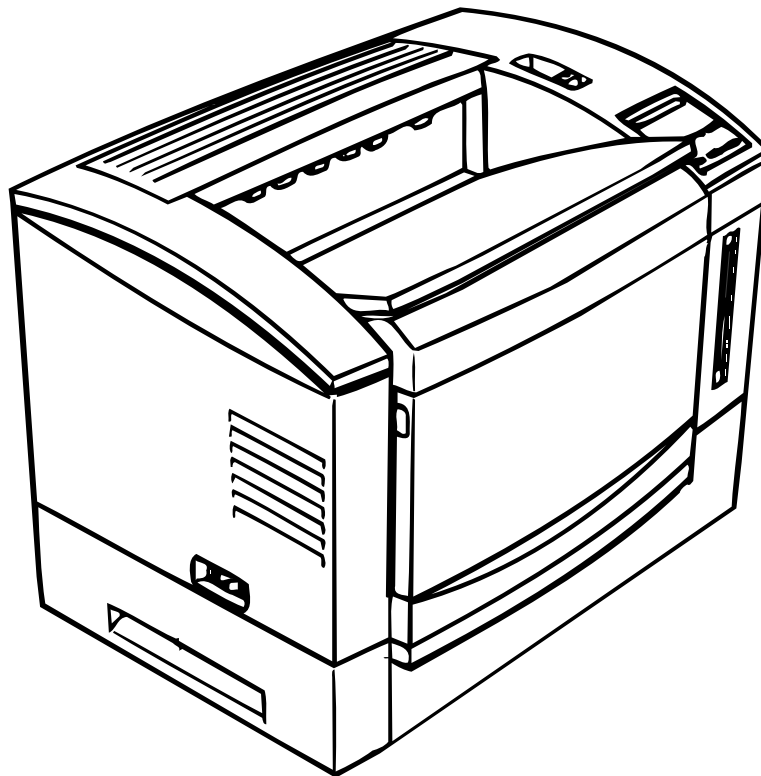


Figure 1-1. Exterior View of the EPL-N2000

Table 1-1 lists the consumables and optional units available for the EPL-N2000.

Table 1-1. Options and Consumables for EPL-N2000

| Option | Part # | Requirements |
|---|---------|---|
| ROM SIMM (EpsonScript Level 2 PostScript ROM SIMM) | C83226* | Minimum RAM size: 2MB |
| 1MB RAM SIMM | --- | |
| 2MB RAM SIMM | --- | |
| 4MB RAM SIMM | --- | |
| 8MB RAM SIMM | --- | |
| 16MB RAM SIMM | --- | |
| 32MB RAM SIMM | --- | |
| NLSP Bitmap 2 Font ROM for LGC* ¹ | --- | Available only in Europe |
| NLSP Bitmap 2 Font ROM for HA | --- | |
| NLSP Bitmap 2 Font ROM for OCR | --- | |
| LocalTalk/Serial Module | C82334* | Cannot be used with AppleTalk I/F of Type B I/F Board |
| Interface Cable (2 m, 6.6') | C83602* | |
| | C836031 | (See Note 2) |
| | C836041 | See Notes 2 and 3) |
| | C836051 | (See Note 2) |
| | C836061 | (See Notes 2 and 3) |
| | C83615* | (See Note 4) |
| Interface Cable (0.4 m, 1.3') | C836141 | (See Note 5) |

Notes:

1. Can be used in HP (GL/2) and ESC/P 2 modes.
2. Can be used only when 32KB serial interface is used.
3. Can be used in combination with interface cable C836141 with the serial interface mode for the LocalTalk /Serial Module.
4. Can be used when RS-232C I/F is selected for serial interface mode and LocalTalk/Serial Module.
5. Can be used with the serial interface mode for LocalTalk/Serial Module.
6. The asterisk is a substitution for the last digit of the product number, which varies by country:
 - 1: For EAI
 - 2: For areas other than EAI

Table 1-1. Options and Consumables for EPL-N2000 (Continued)

| Option | Part # | Description |
|---------------------------------------|---------|-----------------------------|
| Type B Interface Board | C82307* | 32KB Serial I/F (RS-422) |
| | C82310* | 32KB Parallel Interface |
| | C82312* | AppleTalk Interface |
| | C82314* | Coax Interface |
| | C82315* | Twinax Interface |
| | C82313* | GPiB Interface or IEEE-1284 |
| | C82324* | NetWare |
| | C82328* | Fax |
| Imaging Cartridge | S051035 | |
| 250 Sheet Paper Cassette A3 Universal | C81269* | |
| 500 Sheet Paper Cassette A4 | C81264* | |
| 500 Sheet Paper Tray LT | C81265* | |
| 250 Sheet Paper Tray A3 Universal | C81270* | |
| 500 Sheet Paper Tray A4 | C81266* | |
| 500 sheet Paper Tray LT | C81267* | |
| duplex Unit | C81268* | |

*The asterisk is a substitution for the last digit of the product number, which varies by country:

- 1: for EAI
- 2: for the areas other than EAI

1.2 SPECIFICATIONS

This section provides statistical data for the EPL-N2000.

1.2.1 Basic Specifications

- Type Desktop page printer
- Printing method Laser beam scanning and dry electrophotographic process
- Resolution 600 dpi
- Printing speed Single-sided print: 20.0 ppm^{*1}, 11.0 ppm^{*2}
Duplex print: 12.0 ppm^{*1}, 6.0 ppm^{*2}
- First print time Single-sided print: 16.0 seconds^{*1}, 18.0 seconds^{*2}
Duplex print: 26.0 seconds^{*1}, 36.0 seconds^{*2}
- Warm-up time 100 V, 200 V: Less than 70 seconds
(at rated current and 23° C (68° F) temperature)
- Paper supplies See Table 1-2.

*1: Using A4 or letter-size paper in landscape orientation in the direction of the paper path.

*2: Using A3 paper in portrait orientation in the direction of the paper path.

Table 1-2. Paper Feed Sources

| Paper Supply | | Paper Size ^{*1} | Capacity | Usage Thickness (Ream Weight) |
|--|-----------------------|---|-------------------|--|
| MP Tray | Universal | A3+, A3, B4, F4, A4 (L) B5 (L), I-B5 (L), A5 (L), Ledger, Legal, GLG, Letter (L), GLT (L), Executive (L), HLT (L) | 200 ^{*2} | Standard: 60 to 135 g/m ² (16 to 36 lb) Thick paper: 90 to 157 g/m ² (24 to 42 lb) Special papers: Labels, transparencies |
| | | Envelopes Monarch, C10, DL, C5, C6 ^{*1} | 10 | Standard paper 60 to 105 g/m ² (16 to 28 lb) |
| Standard lower cassette unit | A4/letter cassette | GLG, LGL, B A3, B4, LTR (L) A4 (L), B5 (L), A5 (L) ^{*1} | 250 ^{*2} | Standard paper 60 to 90 g/m ² (16 to 24 lb) |
| Optional lower cassette unit ^{*3} | A4/letter cassette | A4 (L), LTR (L), ^{*1} | 500 ^{*2} | Standard paper 60 to 90 g/m ² (16 to 24 lb) |
| | A3 universal cassette | A3, B4, F4, A4 (L) B5 (L), I-B5 (L), A5 (L), Ledger, Legal, GLG, Letter (L), GLT (L), Executive (L), HLT (L) | 250 | |

*1: (L) indicates landscape orientation; all others are portrait orientation

*2: With 75 g/m² (20 lb) paper.

*3: The A4/letter cassette and A3 universal cassette are available for both the standard and optional cassette units.

- ❑ Paper sizes See Table 1-3.

Front tray Width: 92 mm to 330.2 mm (3.26" to 13")

Length: 140 mm to 483 mm (5.5" to 19")

Table 1-3. Available Paper Sizes

| Paper Type | Size Width X Length | MP Tray | Cassette | | Duplex* ² |
|--------------------|------------------------|-----------------|-----------|-----------|----------------------|
| | | Universal | Universal | A4/Letter | |
| A3+ | 328 X 453 mm | P* ¹ | — | — | P |
| A3 | 297 X 420 mm | P | P | — | P |
| B4 | 257 X 364 mm | P | P | — | P |
| F4 | 210 x 330 mm | P | P | — | P |
| A4 | 210 X 297 mm | L* ¹ | L | L | L |
| B5* ³ | 182 x 257 mm | L | L | — | L |
| I-B5* ³ | 176 X 250 mm | L | L | — | L |
| A5 | 148 x 210 mm | L | L | — | L |
| Ledger | 11" X 17" | P | P | — | P |
| Legal | 8.5 X 14" | P | P | — | P |
| GLG | 8.5" X 13" | P | P | — | P |
| Letter | 8.5" X 11" | L | L | L | L |
| GLT | 8" X 10.5" | L | L | — | L |
| Executive | 7.25" X 10.5" | L | L | — | L |
| HLT | 5.5" X 8.5" | L | L | — | L |
| Monarch | 3 7/8" X 7 1/2" | P | — | — | — |
| C-10 | 4 1/8"x9 1/2" | P | — | — | — |
| DL | 110 X 220 mm | P | — | — | — |
| C5 | 162 X 229 mm | P | — | — | — |
| C6 | 114 X 162 mm | P | — | — | — |

*1: P: Portrait orientation

L: Landscape orientation

*2: Only standard-size paper can be used for duplex printing.

*3: The printer identifies B5 with I-B5 paper.

- ❑ Paper types
 - Normal paper: 60 to 90 g/m² (16 to 24 lb)
 - Recycled paper: 60 to 90 g/m² (16 to 24 lb)
 - Special paper: Transparencies (OHP), letterhead, envelopes, labels, thick paper (91 to 157 g/m², 24 to 42 lb)
 - Specific paper: A3+ 328 mm × 453 mm, 75 to 80 g/m² (20 to 21 lb)

Table 1-4. Paper Types

| | | U.S. | Europe |
|-----------------------|--------------------|--|---|
| Normal Paper | Recommended Paper | Minolta Bond 20 lb. (Nekoosa) | Copy paper 70 Copy paper 80 (Neusiedler) |
| | Standard Paper | Xerox 4024 DP 20 lb | — |
| Recycled Paper | | Ardor Recycled Xerox/Bond 20 lb (Nekoosa) | RCC80 (Steinbeis) |
| Special Paper | Letterhead | Four Star 403C 20 lb, Parchment Deed 13C 20 lb Neenah Bond 20 lb, Gilbert 20 lb | |
| | Transparency (OHP) | 3M PP2500 | |

Table 1-5. Usability of Special Papers

| Feeding Source | Standard Paper | Normal Paper | Special Papers — OHP, Envelopes, Labels |
|----------------------------------|----------------|--------------|---|
| MP tray | RF | R | P |
| Lower paper cassette | RF | R | N |
| Universal cassette (250 sheets) | RF | R | N |
| A4, letter cassette (500 sheets) | RF | R | N |
| Duplex unit | RF | R | N |

RF: Reliable feeding and good image quality.

R: Reliable feeding and good image quality, but limited to paper generally available.

P: Possible, but limited to paper generally available.

N: Not supported.

- ❑ Paper feed alignment direction: Center alignment for all sizes
- ❑ Paper ejection: Face-down only
- ❑ Output tray capacity: 500 sheets (75 g/m², 20 lb paper)

- Printable area: See Figure 1-2.

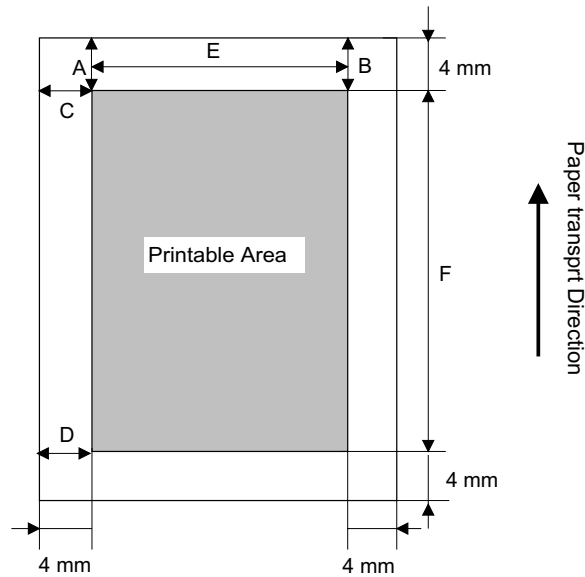


Figure 1-2. Printable Area

Note: For A3+ paper (E X F) : 297 × 420 mm (12.12 X 17.14 ")
 The maximum printable area with good image quality (E X F) :
 323 × 443 mm (12.72 × 17.44").
 Printable area can vary, depending on the emulation.

1.2.2 Electrical Specifications

Table 1-6. Electrical Specifications

| Printer Version | 100 V Version | 120 V Version | 200 V Series |
|------------------------------|--|-------------------------------------|-------------------------------------|
| Rated Voltage | 90 V to 110 V (100 V ± 10 %) | 108 V to 132 V (120 V ± 10 %) | 207 V to 253 (230 V ± 10 %) |
| Rated Frequency Range | 50 /60 Hz ± 3 Hz | | |
| Power Consumption | Less than 790 W Less than 45 W (in energy-saver mode) | | |
| Current Consumption | Less than 8 A (at rated voltage) | Less than 7 A (at rated voltage) | Less than 5 A (at rated voltage) |

1.2.3 Specifications for Reliability, Durability, and Maintenance

- MPBF* (mean prints between failures): over 60,000 sheets or 3,000 hours
 - * MPBF indicates an average number of pages printed before occurrence of problem requiring replacement or service.

Table 1-7. Paper Feed Reliability

| | MP tray | Cassette* ¹ | Duplex |
|-------------------------|--|--|-----------------|
| Jam rate * ² | 1/ 2000 or less | 1/ 2000 or less | 1/ 1000 or less |
| Feed failure | 1/ 2000 or less | 1/ 2000 or less | 1/2000 or less |
| Multiple paper feeds | 1/ 500 or less | 1/ 500 or less | 1/500 |
| Leading edge bent | 1/ 1000 for 1C or more * ³ | 1/ 1000 for 1C or more * ³ | 1/500 or less |
| Paper wrinkle | 1/ 1000 or less | 1/ 1000 or less | 1/500 or less |

*1: A4/letter cassette and universal cassette from the lower paper cassette units.

*2: Multiple paper feeds excluded.

*3: Disregarding a sheet bent less than 1C. (1C = 1 corner bent by 1 mm or less)

Note: Statistics above only apply to newly unpacked paper.

- Print Position (Refer to Figure 1-2.)
 - Single-sided print:
 - Main scan direction: Standard position (C) ± 2.0 mm
 - Sub scan direction: Standard position (A) ± 2.5 mm
 - Duplex print:
 - Main scan direction: Standard position (C) ± 3.0 mm
 - Sub scan direction: Standard position (A) ± 2.5 mm
- Paper curl height: ± 30 mm or less
- MTTR (mean time to repair): 30 minutes or less
- Printer operating life: 5 years or 360,000 sheets, whichever comes first.
- Acoustic noise: 38 db(A), standby
53 db(A), operation
- Ozone density: Less than 0.02 ppm (Blue Angel standard conformance)
- Toxicity: No toxicity exists in OPC, toner, or plastic materials
- Skew: See Table 1-8.

Table 1-8. Paper Skew

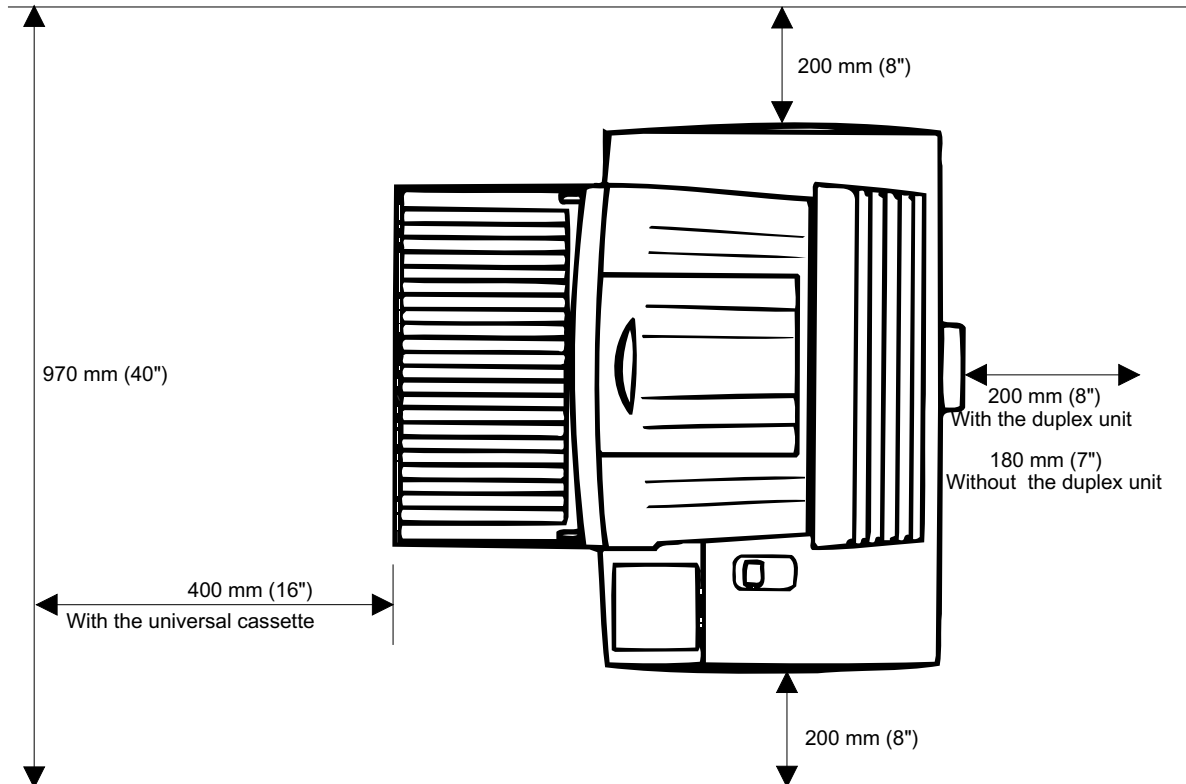
| | Direction | A4 (Landscape) | A3 |
|--------------------|--------------------|----------------|----------|
| Single-sided print | C-D * ¹ | ± 1.5 mm | ± 3.0 mm |
| | A-B * ² | ± 2.0 mm | ± 2.0 mm |
| Duplex print | C-D | ± 2.5 mm | ± 4.5 mm |
| | A-B | ± 3.0 mm | ± 3.0 mm |

*1: Main scan direction

*2: Sub scan direction (See Figure 1-2.)

1.2.4 Environmental Conditions for Operation (Including Consumables)

- ❑ Temperature: 10 to 35° C (50 to 90° F)
- ❑ Humidity: 15 to 85% RH (withour condensation)
- ❑ Altitude: 2500 m (8202') or less
- ❑ Atmospheric pressure: 760 hpa or more
- ❑ Levelness: 1° or less
- ❑ Illuminance: 3,000 lux or less (must not be exposed to direct sunlight.)
- ❑ Surrounding space required: See Figure 1-3.



Leave 880 mm in height including 400 mm for opening the top cover.
An additional 94 mm in height is needed when installing the optional cassette unit.

Figure 1-3. Space Requirements

1.2.5 Environmental Conditions for Storage and Transportation

Table 1-9. Environmental Conditions for Storage

| | | | |
|-----------------------------|---|------|---|
| Storage life | 18 months after production, packed. | | |
| Temperature | Normal (over full storage life) | | 0 to 35° C (32 to 95 F) |
| | Extremes (¹ / ₃ of full storage life) | High | 35 to 55° C (95 to 131 F)* ¹ |
| | | Low | -20 to 0° C (-4 to 32 F) |
| | Change range per hour | | Less than 10° C (18 F) |
| Humidity | Normal (over full storage life) | | 30 to 85 RH |
| | Extremes (¹ / ₃ of the full storage life) | High | 85 to 95% RH |
| | | Low | 10 to 30% RH |
| Atmospheric Pressure | 61.3 to 101.3K Pa (460 to 760 mm Hg) | | |

*1 Without Imaging cartridge

Resistance to vibration (including consumables):

Vibration frequency: 5 to 100 Hz , 100 to 5 Hz

Acceleration: 1 G

Transportation time: 10 minutes (1 way)

Acceleration directions: 3 directions

Acceleration duration: 60 minutes for each direction – X, Y and Z (180 minutes total)

Drop test: No damage at JIS Z0200-1987 level 1

1.2.6 Specifications for the Imaging Cartridge

Cartridge life: 10,000 sheets *

* This number is printable pages in continuous print mode using A4 or letter size paper at a 5% image ratio (black/white ratio). Life varies, depending on the image ratio and printing mode, such as continuous/intermittent, density and toner saver.

Table 1-10. Environmental Conditions for Storage and Transportation

| | | | |
|-----------------------------|---|------|---|
| Storage life | 18 months after production, packed. | | |
| Temperature | Normal (over full storage life) | | 0 to 35 ^o C (32 to 95 F) |
| | Extremes (¹ / ₃ of the full storage life) | High | 35 to 40 ^o C (95 to 104 F)* ¹ |
| | | Low | -20 to 0 ^o C (-4 to 32 F) |
| | Change range per hour | | Less than 10 ^o C (18 F) |
| Humidity | Normal (over full storage life) | | 30 to 85 RH |
| | Extremes (¹ / ₃ of the full storage life) | High | 85 to 95% RH |
| | | Low | 10 to 30% RH |
| Atmospheric Pressure | 74.0 to 101.3K Pa (555 to 760 mm Hg) | | |

* 1: Without condensation

Drop test: Height : 76 cm

Resistance to vibration: Same as the printer

1.2.7 Applicable Standards

Safety Standards

- USA UL1950
- Canada CSA950
- Europe EN60950:1992
Annex ZB, ZC

Safety Regulations (Laser Radiation)

- USA 21 CFR Chapter 1 Subchapter J Part 1040
- Europe IEC825

EMI

- USA 47 CFR Part 15 Subpart B Class A
- Canada ICES-003:Issue 2 Class A
- Europe EN 55022 (Class A)

Others

- Toner No effect on human health (OSHA-TSCA, E1NEX)
- OPC No effect on human health (under OSHA regulations)
- Ozone UL478 (5th edition)
- Materials SWISS environmental law (must contain no CdS)

1.2.8 Physical Specifications

- Dimensions (Width X Depth X Height):
561 × 402 × 408 mm (22 × 16 × 16")
(Without optional lower cassette unit)
561 × 402 × 508.3 mm (22 × 16 × 20")
(With optional lower cassette unit)
- Weight: Approximately 24 kg (53 lb.)
(Consumables and options excluded)

1.2.9 Process Specifications

- Printing system Electrostatic and dry electrophotographic process
- Exposing source Semi-conductor laser beam scanning system
- Exposed object OPC drum (Organic Photo Conductor)
- Charging system Rotating charge brush system
- Developing system Fine Micro Toning system
- Toner Nonmagnetic toner
- Image transfer system Roller transfer system
- Drum cleaning system Cleaning blade
- Fixing system Heat roller
- Image density control Variable developer bias (can be set by user)

1.2.10 Controller Specifications

| | | |
|--|----------------|---|
| <input type="checkbox"/> CPU: | RISC type CPU: | MB86935-50 |
| | Clock speed: | 47.6 MHz |
| <input type="checkbox"/> RAM: | Standard: | 4MB |
| | Max.*1: | 68MB |
| <input type="checkbox"/> ROM: | | 4MB |
| <input type="checkbox"/> EEPROM: | | 16Kbits |
| <input type="checkbox"/> Host interface: | Standard: | Bi-directional parallel B type / C type Ethernet*2 |
| | Optional: | Type B *3 LocalTalk/Serial Module |
| <input type="checkbox"/> Optional slots: | RAM SIMMs: | 2 slots |
| | ROM SIMM: | 1 slot |
| | PCMCIA: | 1 slot |
| | NLSP socket: | 1 slot |
| | Type B: | 1 slot |



*1: Expanded with up to 2 SIMMs

2: Type-B I/F Board (C82331) (standard) is installed in Type-B slot.

3: Remove Type-B I/F Board (C82331) (Standard) before inserting Type-B I/F card.

Make sure power is off when installing and removing options.

1.2.11 Software Specifications

- Built-in emulation modes:
 - PCL5e *1
 - GL/2 *1
 - EPSON GL/2 *2
 - FX
 - ESC/P 2
 - I239X

*1: Included in HP LaserJet 4 emulation.

*2: EPSON GL/2 mode, which emulates the GL/2 mode in the HP LaserJet 4 emulation, has 2 modes; LJ4-GL2 mode and GL-like mode.

- LJ4-GL2 mode: Used to print with software that supports the HP 7600 series electrostatic plotter. It emulates GL/2 mode in the HP LaserJet 4 emulation. In EPSON GL/2 mode, however, the operator can reach some parameters with SelecType, without sending commands.
- GL-like mode: Used to print with software that supports the HP7475A series pen plotter. GL-like mode features all the commands for LJ4-GL/2 mode, except some instructions such as plotter unit and picture frame, that are the same as in EPSON GL/2 mode. However, since GL-like mode doesn't support some commands used in the HP GL mode, print cannot be assured with application software that specifies those commands.

See Table 1-11 for differences between LJ4-GL/2 mode and the GL-like mode.

Table 1-11. Differences between LJ4-GL/2 Mode and GL-like Mode

| | LJ4-GL/2 Mode | GL-like Mode |
|---|---|---|
| Orientation | Can be set in printing menu | Always landscape |
| Plotter Unit | 1/1016 inch | 1/1021 inch |
| Picture Frame | Same as in GL/2 mode in HP LaserJet mode | Hard clip limit for EPSON GL mode |
| Default Value for P1 and P2 | Left and right bottom edge of the picture frame | Inside the picture frame |
| Undefined Command | The first character discarded | Both of 2 characters discarded |
| CS, CA Command | Unsupported | Supported (Not fully compatible with the HP-GL mode) |
| Procedure for omission of 2nd parameter of the DT command | No terminator plotted | Terminator plotted |
| Default value for number of pens | 2 | 8 (can be set by sending a command) |

1.2.12 Fonts Specifications

- Built-in fonts: Scalable: 45 fonts
 Bitmap: 1 font

See Table 1-12 on the [next page](#) for the list of the built-in fonts.

Table 1-12. Built-in Fonts

| Resident Fonts | Applicable Modes | | |
|-------------------------------------|------------------|---------|----|
| | PCL 5e GL/2 | ESC/P 2 | FX |
| Bitmap font | | | |
| Line Printer | S | NS | NS |
| Scalable fonts | | | |
| Dutch 801 Roman SWC | S | NS | NS |
| Dutch 801 Bold SWC | S | NS | NS |
| Dutch 801 Italic SWC | S | NS | NS |
| Dutch 801 Bold Italic SWC | S | NS | NS |
| ZapfHumanist 601 Demi SWC | S | NS | NS |
| ZapfHumanist 601 Bold SWC | S | NS | NS |
| ZapfHumanist 601 Demi Italic SWC | S | NS | NS |
| ZapfHumanist 601 Bold Italic SWC | S | NS | NS |
| Ribbon 131 SWC | S | NS | NS |
| Clarendon Condensed SWC | S | NS | NS |
| Swiss 742 SWC | S | NS | NS |
| Swiss 742 Bold SWC | S | NS | NS |
| Swiss 742 Italic SWC | S | NS | NS |
| Swiss 742 Bold Italic SWC | S | NS | NS |
| Swiss 742 Condensed SWC | S | NS | NS |
| Swiss 742 Bold Condensed SWC | S | NS | NS |
| Swiss 742 Condensed italic SWC | S | NS | NS |
| Swiss 742 Bold Condensed italic SWC | S | NS | NS |
| Incised 901 SWC | S | NS | NS |
| Incised 901 Black SWC | S | NS | NS |
| Incised 901 SWC Italic | S | NS | NS |
| Original Garamond SWC | S | NS | NS |
| Original Garamond Bold SWC | S | NS | NS |
| Original Garamond Italic SWC | S | NS | NS |
| Original Garamond Bold Italic SWC | S | NS | NS |
| Audrey Two SWC | S | NS | NS |
| Flareserif 821 SWC | S | NS | NS |
| Flareserif 821 Extra Bold SWC | S | NS | NS |
| Swiss 721 Roman SWM | S | S | NS |
| Swiss 721 Bold SWM | S | S | NS |
| Swiss 721 Oblique SWM | S | NS | NS |
| Swiss 721 Bold Oblique SWM | S | NS | NS |
| Dutch 801 Roman SWM | S | S | S |
| Dutch 801 Bold SWM | S | S | S |
| Dutch 801 Italic SWM | S | NS | NS |
| Dutch 801 Bold Italic SWM | S | NS | NS |
| Symbol Set SWA | S | NS | NS |
| More WingBats SWM | S | NS | NS |
| Courier SWC | S | S | S |
| Courier Bold SWC | S | S | S |
| Courier Italic SWC | S | NS | NS |
| Courier Bold Italic SWC | S | NS | NS |
| Letter Gothic Roman SWC | S | S | S |
| Letter Gothic Bold SWC | S | S | S |
| Letter Gothic Italic SWC | S | NS | NS |

S: Supported , NS: Not supported

□ Font Symbol Sets

In LJ4 Emulation Mode (Bitmap Fonts): 28 Symbol Sets

| | | | |
|------------------------|----------------|-------------|----------------|
| Roman-8 * ¹ | ECM94-1 | Norwege 2 | Spanish |
| Roman Extension | 8859-9 ISO | Italian | Swedish |
| Legal | 8859-2 ISO | UK | Portuguese |
| IBM-US | IBM-DN | Norwege 1 | IBM Portuguese |
| ANCI ASCII | Swedish 2 | IBM Spanish | |
| JIS ASCII | HP German | HP Spanish | |
| IRV | German | French 2 | |
| French | PcMultilingual | Chines | |

In LJ4 Emulation Mode (Scalable Fonts): 27 Symbol Sets

| | | |
|------------------------|-----------------|-----------------|
| Roman-8 * ¹ | Roman Extension | Veinternational |
| ECM94-1 | Legal | VeUS |
| 8859-2 ISO | PsMath | PiFont |
| 8859-9 ISO | WiTurkish | PcE.Europe |
| MsPublishing | VeMath | Symbol |
| Desktop | Math-8 | WiAnsi |
| WiE.Europe | PcTk437 | Wingdings |
| Windows | PsTest | McText |
| IBM-US | IBN-DN | PcMultilingual |

- *1: Includes other 19 sets (partial variations of the Roman-8 set):
 Norweg 1, Italian, Swedish, ANSI ASCII, UK, French, German, Spanish, Norweg2,
 French2, 29HP German, JIS ASCII, HP Spanish, Chinese, IRV, Swedish2, Portuguese, IBM
 Portuguese, IBM Spanish

In ESC/P 2 or FX Modes: 9 Symbol Sets and 15 International Character Sets

| | |
|-----------------------------|-------------------------|
| PC437 (USA/standard Europe) | PC850 (Multilingual) |
| PC860 (Portuguese) | PC863 (Canadian-French) |
| PC865 (Norwegian) | PC857 (PcTurk2) |
| PC852 (East Europe) | BRASCII |
| Abicomp | |

| | |
|---------------|--------|
| USA | France |
| Germany | UK |
| Denmark | Sweden |
| Italy | Spain |
| Japan | Norway |
| Denmark2 | Spain2 |
| Latin America | Korea* |
| Legal* | |

- * Available for ESC/P 2 emulation only

In i239X Emulation Mode: 5 Symbol Sets and 7 Fonts

| | | |
|-----------------------------|-------------------------|----------------|
| PC437 (USA/standard Europe) | PC850 (Multilingual) | |
| PC860 (Portuguese) | PC863 (Canadian-French) | |
| PC865 (Norwegian) | | |
| EPSON Sans-Serif | Courier SWC | EPSON Prestige |
| EPSON Gothic | EPSON Presentor | |
| EPSON Orator | EPSON Script | |

1.3 INTERFACE SPECIFICATIONS

The following interfaces are available for EPL-N2000 printer.

- ❑ Standard: Parallel B type I/F
Parallel C type I/F
Network I/F
- ❑ Optional: LocalTalk / Serial Module *
Type-B I/F
* Connector for LocalTalk is built in on the I/F bracket, along with connectors for standard I/F.

NOTE: Type-B I/F Board (C82331*) (standard) is inserted in the Type-B interface slot. Note the following when Type-B I/F Board (C82331*) is installed:

- ❑ Remove Type-B I/F Board (C82331*) when installing Type-B interface.
- ❑ Remove Type-B I/F Board (C82331*) when using LocalTalk/Serial Module in LocalTalk mode.

* Type-B I/F Board: C82331* (The asterisk is a substitution for the last digit which varies by the country.

1 : For EAI 2 : For the areas other than EAI

1.3.1 Parallel Interface Specifications

1.3.1.1 Parallel Interface B Type Specifications

- ❑ Type: Bidirectional Parallel I/F (IEEE-1284)
- ❑ Operation modes: Compatibility mode
Nibble mode
ECP mode
(Byte mode and EPP mode are not supported.)
- ❑ Data transmission system: STROBE synchronization, 8-bit parallel data transfer
- ❑ Handshaking: BUSY and ACKNLG signals
- ❑ Connector type: 57RE-4060-730B (D5)
Receptacle: (DDK)
- ❑ Applicable plug: Amphenol or equivalent
- ❑ Cable length: 3 meters (10") or less

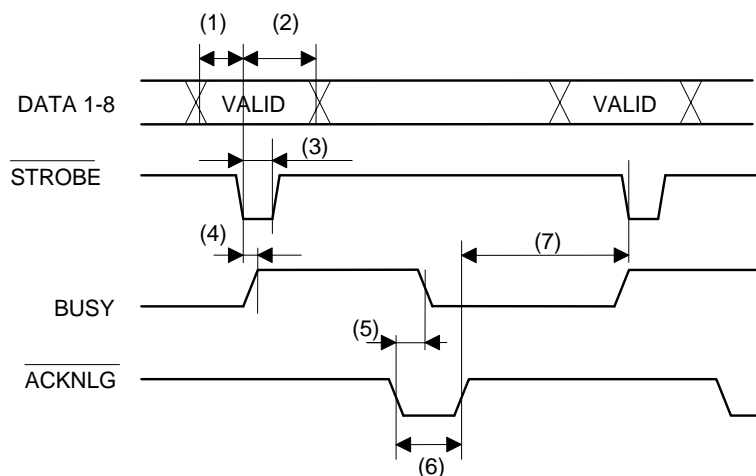


Figure 1-4. Timing Chart

- ❑ Signal timing: See the figure below and Table 1-13.

Table 1-13. Timing in Compatibility Mode

| Description ^{*1} | Minimum | Typical | Maximum |
|--|-------------|-------------------------|-------------|
| (1) DATA setup | 0.5 μ s | | |
| (2) DATA hold | 0.5 μ s | | |
| (3) $\overline{\text{STROBE}}$ pulse width | 0.5 μ s | | |
| (4) BUSY to $\overline{\text{STROBEX}}$ | 0 s | | |
| (5) $\overline{\text{STROBEX}}$ to BUSY | | | 0.5 ms |
| (6) BUSY to $\overline{\text{STROBEX}}$ | 0 s | | |
| (7) $\overline{\text{ACKX}}$ pulse width | 0.5 μ s | 1 μ s ^{*2} | |
| (8) $\overline{\text{ACKX}}$ to BUSY | 0 s | | |
| (9) BUSY to PE or $\overline{\text{ERRX}}$ | 2 ms* | | |
| (10) PE or $\overline{\text{ERRX}}$ to BUSY | 2 ms* | | |
| (11) Power on to signal output valid | | | 0.5 μ s |
| (12) PE or $\overline{\text{ERRX}}$ to $\overline{\text{ACKX}}$ | 2 ms* | | |
| (13) $\overline{\text{STROBEX}}$ to $\overline{\text{ACKX}}$ | 0 s* | | |

*1: Signals ending in "X" are Active LOW.

*2: SE specification

Table 1-14. Pin Assignments for Parallel B Type I/F

| Pin | Compatibility Mode | Nibble Mode | ECP Mode | I/O |
|----------|---------------------|-------------|-------------|-----|
| 1 | nStrobe | HostClk | | I |
| 2 to 9 | DATA 1 to DATA 8 | | | I/O |
| 10 | nAcknlg | PtrCLK | PeriphClk | O |
| 11 | Busy | PtrBusy | PeriphAck | O |
| 12 | PErrr | AckDataReq | nAckReverse | O |
| 13 | Select | Xflag | | O |
| 14 | nAutofeed | HostBusy | HostAck | I |
| 15 | NC | | | — |
| 16 | GND | | | — |
| 17 | FG | | | — |
| 18 | PeripheralLogicHigh | | | O |
| 19 to 30 | GND | | | — |

Table 1-14. Pin Assignments for Parallel B Type I/F (Continued)

| Pin | Compatibility mode | Nibble mode | ECP mode | I/O |
|-----|--------------------|-----------------|-------------|-----|
| 31 | nInit | | nReverseReq | I |
| 32 | Fault | nDataAvail | nPeriphReq | O |
| 33 | NC | | | — |
| 34 | NC | | | — |
| 35 | NC | | | — |
| 36 | nSelctIn | IEEE1284 active | | O |

NC: Not connected.
CG: CHASSIS -GND

□ Signal descriptions

StrobeX (in)

Compatibility mode: Latch pulse used to read print data. DATA is valid when the signal is LOW.

Negotiation phase: Latch pulse used to read an extensibility request value

Nibble mode: Always HIGH

ECP mode: Used to transmit print or address data from the host computer to the printer by handshaking with PeriphAck (Busy).

DATA 1 to DATA 8 (in/out)

All modes: DATA 8 is MSB and DATA 1 is LSB.

Compatible mode Forward channel data

Negotiation phase Extensibility request value

Nibble mode Not used

ECP mode Bidirectional data or address

Acknlg (out)

Compatible mode: An acknowledge pulse that indicates that data from the host computer has been received.
[SE specification]
This signal is always output along with the Busy signal. Strobe is independent of these signals.

Negotiation phase: Indicates that IEEE 1284 is supported when it's LOW, which later goes HIGH indicating that Xflag and Data Available Flag are valid.

Reverse data transfer phase: Indicates that nibble data is valid when it's LOW in nibble mode.

Reverse idle phase: Switching this signal from LOW to HIGH causes an interruption informing the host computer that data is available.

ECP mode Used to transmit data from the printer to the host computer by handshaking with HostAck (nAutfeed).

BUSY (out)

| | |
|------------------------------|---|
| Compatible mode: | HIGH status indicates the printer is not ready to accept data. |
| Negotiation phase: | Reflects busy status in forward channel. |
| Reverse data transfer phase: | Nibble data bit is 3, then 7 in nibble mode. |
| Reverse idle phase: | Reflects busy status in forward channel. |
| ECP mode: | Used for flow control in forward channel. Also used in reverse mode as the 9th data bit, which indicates whether signal data information is data or command. |

PE (out)

| | |
|------------------------------|---|
| Compatible mode: | Indicates paper jam or paper empty status in paper tray or cassette. ERRX goes LOW when PE goes HIGH. |
| Negotiation phase: | HIGH status indicates whether or not IEEE is supported. Then, it follows nDataAvail (nFault). |
| Reverse data transfer phase: | Nibble data bit is 2, then 6 in Nibble mode. |
| Reverse idle phase: | Remains HIGH until the host computer requests data transmission. Then, it follows nDataAvail (nFault). |
| ECP mode: | Aknowledges nReverseRequest when this signal is set to LOW. The host computer detects the status as an allowance to drive signal data. |

Slctout (out)

| | |
|------------------------------|---|
| Compatibility mode: | Always HIGH |
| Negotiation phase: | Xflag indicates Extensibility flag. It is used in response to extensibility request value from the host computer. |
| Reverse data transfer phase: | Nibble data bit is 1, then 5 in nibble mode. |
| Reverse idle phase: | Same as negotiation phase. |
| ECP mode: | Same as negotiation phase. |

AutoX (in)

| | |
|------------------------------|--|
| Compatible mode: | Not used. |
| Negotiation phase: | This signal goes HIGH and IEEE 1284 active (nSelectIN) goes LOW when requesting IEEE 1284 mode. Then it is set to HIGH by setting PtrClk (nAck) to LOW. |
| Reverse data transfer phase: | The host computer informs the printer that it is ready to receive data in nibble mode by setting this signal to LOW. Then sets the signal to HIGH to inform the printer that data has been received. |
| Reverse idle phase: | This signal goes HIGH in response to a LOW pulse of PtrClk (nAck) to enter reverse data phase again. Reverse idle phase is returned to compatibility mode if this signal goes HIGH and IEEE 1284 active (nselectIn) goes LOW at the same time. |
| ECP mode: | Used for flow control of forward channel. Also used in reverse mode as the 9th data bit, which indicates whether signal data information is valid data or command. |

| | |
|------------------------------|--|
| PeriLH (out) | [SE specification] Only defined for IEEE 1284-C connector. |
| Init (in) | |
| Compatible mode: | As long as this signal is LOW, the Busy signal remains HIGH. 1. The printer processes data received before the signal goes LOW. 2. The printer ignores a LOW strobe pulse input while the signal is LOW. |
| Negotiation phase: | Always HIGH. |
| Reverse data transfer phase: | Always HIGH. |
| ECP mode: | Set to LOW when switching to reverse channel. Data signal can be transmitted to peripheral devices only when this signal is LOW and 1284 active is HIGH. |
| Error (out) | |
| Compatible mode: | Indicates an error has occurred when this signal is LOW. |
| Negotiation phase: | Goes HIGH when acknowledging compatibility with IEEE 1284. In nibble mode, goes LOW to indicate data is ready to be sent after the host computer has set HostBusy(nAutoFeed) to HIGH. |
| Reverse data transfer phase: | Set to LOW to indicate data to be sent to the host is ready in nibble mode. |
| Reverse idle phase: | Indicates whether or not data is valid. |
| ECP mode: | Goes LOW when requesting transmission with the host computer. Effective both in forward and reverse channel. |
| Slctin | |
| Compatible mode: | Always LOW. |
| Negotiation phase: | Set to HIGH while HostBusy is LOW to request 1284 mode. |
| Reverse data transfer phase: | Set to HIGH to indicate the bus direction is from the printer to the host. To terminate 1284 mode, this signal is set to LOW and the bus direction subsequently reverses to the printer. |
| Reverse idle phase: | Same as the reverse data transfer phase. |
| ECP mode: | Always stays at HIGH level. Set to LOW to terminate ECP mode and switch back to compatibility mode. |
| HostLogicHigh | Not used. |
| GND | Ground level for the twisted pair return signal. |
| CG | Connected to the printer chassis. The printer chassis GND and then signal GND are connected to each other. |
| +5 V | Pulled up to +5 V through 1K Ω resistor. |

1.3.1.2 Parallel Interface C Type Specifications

- ❑ Type: Bidirectional parallel I/F (IEEE-1284)
- ❑ Operational modes: Compatibility, nibble, ECP modes
(Byte mode and EPP mode are not supported.)
- ❑ Data transmission system: STROBE synchronization, 8-bit parallel data transfer
- ❑ Handshaking: BUSY and ACKNL signals
- ❑ Connector type: DHA-RP36-13AN receptacle (DDK)
- ❑ Applicable plug: IEEE 1284-C plug
- ❑ Cable length: 3 meters (10') or less
- ❑ Signal timing: Same as B type

Table 1-15. Pin Assignments for Parallel C Type I/F

| Pin | Compatibility Mode | Nibble Mode | ECP Mode | I/O |
|----------|---------------------|-------------|-----------------|-----|
| 1 | BUSY | PtrBusy | PeriphAck | O |
| 2 | Slctout | Xflag | | O |
| 3 | nAcknlq | PtrClk | PeriphClk | O |
| 4 | nFault | nDataAvial | nPeriphReq | O |
| 5 | PError | AckDataReq | nAckReverse | O |
| 6 to 13 | DATA 1 to DATA 8 | | | I/O |
| 14 | nlnit | | nReverseRequest | I |
| 15 | nStrobe | HostClk | | I |
| 16 | nSelectIn | ReverseReq | | I |
| 17 | Autofeed | HostBusy | HostAck | I |
| 18 | HostLogicHigh | | | I |
| 19 to 35 | GND | | | I |
| 36 | PeripheralLogicHigh | | | O |

- ❑ Signal description Same as for Parallel B Type I/F.

1.3.1.3 Network Interface

Type-B I/F Board (C82331*) (standard) is installed in the Type-B interface slot.

- ❑ Interface Protocol: Novell® Netware® 3.X (IPX/SPX)
 EtherTalk
 Epson Peer to Peer Protocol
 TCP/IP
- ❑ Connector: RJ45 X 1 (10Base T)
 BNC X 1 (10Base 2)
- ❑ Applicable Cable 2-pair Category 3 or 4 or 5 UTP (10Base T)
 RG-58A/U (10Base 2)
 RG-58C/U (10Base 2)
 RG-58/U (10Base 2)

* The asterisk is a substitution for the last digit which varies by the country.
1 : For EAI 2 : For the areas other than EAI

Table 1-16. Pin Assignments for the RJ-45 Connector

| Pin No. | Signal Name | I/O |
|---------|-------------|-----|
| 1 | Tx+ | O |
| 2 | Tx- | O |
| 3 | Rx+ | I |
| 4 | NC | — |
| 5 | NC | — |
| 6 | Rx- | I |
| 7 | NC | — |
| 8 | NC | — |

1.3.2 Serial Interface Specifications (LocalTalk/Serial Module)

- ❑ Type: RS-232C/current loop
- ❑ Transfer system: Full duplex
- ❑ Transfer speed: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 bps
- ❑ Synchronization: Asynchronous start-stop system
 - Start-bit: 1 bit
 - Stop-bit: 1 or 2 bits
 - Data length: 7 or 8 bits
 - Parity: Odd, even, or none
- ❑ Protocol: DTR/RTS *¹, X-ON/X-OFF , or robust mode *²
 - *1: Cannot be combined with X-ON/X-OFF)
 - *2: Sends an X-ON a second when the printer is ready to receive data.

Table 1-17. Serial Interface Pin Assignments

| Pin No. | RS-232C | | Current Loop | |
|---------|---------|-----|----------------|-----|
| | Signal | I/O | Signal | I/O |
| 1 | DTR | O | NC | — |
| 2 | CTS | I | NC | — |
| 3 | TXD | O | TTY-TXD return | I |
| 4 | GND | — | GND | — |
| 5 | RXD | I | TTY-RXD return | O |
| 6 | NC | — | TTY-TXD | O |
| 7 | NC | — | NC | — |
| 8 | NC | — | TTY-RXD | I |

❑ Signal descriptions

- DTR** Signal output by the printer. When the DTR signal is HIGH, the printer can receive the RXD signal. When the SelecType settings do not specify DTR control, the signal level remains HIGH while printer power is on. When SelecType is used for DTR control, DTR goes LOW for any error condition. Data (RXD) from the host computer must be stopped within 128 characters after DTR goes LOW.
- CTS** Always ignored.
- TXD** Serial ASCII data output by the printer. It remains in MARK state (LOW level) between transmitted character codes. Logic 0 is at HIGH level (SPACE), and logic 1 is at LOW level (MARK).
- GND** Connected to the printer chassis. The printer chassis GND and signal GND are connected to each other.
- RXD** Serial ASCII data input to the printer. It maintains the MARK state (LOW level) between received character codes.

| | |
|-----------------------|---|
| TTY-TXD | Current loop signal: HIGH impedance (SPACE) between pins 17 and 24 or X-ON signal sent across pins 17 and 24 indicates that the printer is ready to accept data; LOW impedance (MARK) or X-OFF signal sent indicates that the printer is busy. |
| TTY-RXD Return | Current loop signal: Current return for pin 17. |
| TTY-TXD Return | Current loop signal: Input data current loop. |
| TTY-RXD | Current loop signal: Current return to pin 25. |

Protocol

There are two types of protocols, as listed below, and each of them can be designated by the SelecType independently.

DTR/DSR protocol

The DTR/DSR control protocol can be selected by SelecType. The DTR signal is set to a HIGH level when the printer is ready to receive data, and to LOW when an error is detected. DTR remains HIGH when SelecType is set to OFF for DTR control. The printer sends only TXD off when the DSR signal is HIGH. (DSR signal is always assumed HIGH when select mode for DSR is set to OFF. X-ON/X-OFF transmission is independent of DSR.

X-ON/X-OFF (DC1/DC3) protocol

Select mode is used to execute X-ON/X-OFF protocol. The X-OFF (DC3) code, transmitted by error detection, warns the host computer to stop sending data within 128 characters. No further X-OFF codes are sent in response to additional data sent from the host computer after the warning has been given once. An X-ON code is transmitted when all the errors are cleared. The X-OFF code is transmitted only once when the remaining capacity of receiving buffer drops under for 128 characters, or any error occurs. The X-ON code is sent when the printer is powered on. The SelecType setting can be used to withhold X-ON/X-OFF code transmission.

1.3.3 Optional LocalTalk Interface (LocalTalk/Serial Modelu)

This printer can use an optional LocalTalk interface module.

Type: LocalTalk
 Signal level: Same as RS-422 signal level
 Protocol: X-ON/X-OFF (cannot be combined with DTR control)
 DTR control (cannot be combined with X-ON/X-OFF)
 Transfer speed: 230.4K bps

Table 1-18. LocalTalk Interface Pin Assignments

| Pin No. | Signal Name | I/O | Description |
|---------|-------------|-----|--|
| 1 | DTR | OUT | Signal output by the printer. When the DTR signal is HIGH, the printer can receive the RXD signal. |
| 2 | CTS | IN | The printer transmits data through TXD while CTS is HIGH. |
| 3 | TXD- | OUT | Serial ASCII data output from the printer. At a HIGH level when SD+ voltage is higher than SD- voltage. At a LOW level when SD+ voltage is less than SD- voltage. Logic 0 is SPACE and logic 1 is MARK . The state must be maintained between transmitted character codes. |
| 4 | GND | — | Ground. |
| 5 | RXD- | IN | Serial ASCII data input from computer. At a HIGH level when RD+ voltage is higher than RD- voltage. At a LOW level when RD+ voltage is less than RD- voltage. Logic 0 is SPACE and logic 1 is MARK. The state must be maintained between transmitted character codes. |
| 6 | TXD+ | OUT | Refer to TXD-. |
| 7 | NC | — | Not connected. |
| 8 | RXD+ | IN | Refer to RXD-. |

1.4 OPERATING INSTRUCTIONS

This section describes the functions performed through the control panel, such as test print, hexadecimal dump, and the SelecType functions.

1.4.1 Control Panel

This section gives instructions for the control panel, which consists of an LCD, 8 buttons, and 6 indicator lights.

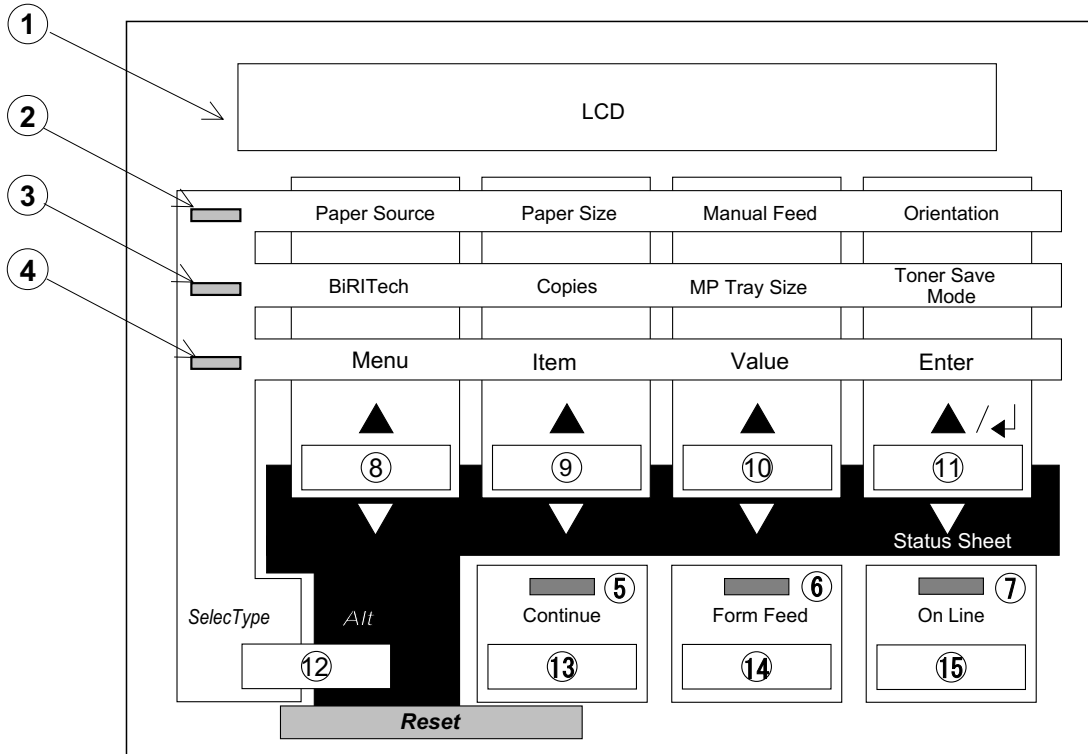


Figure 1-5. Control Panel

(1) LCD Panel

A 20-character (5 × 7 dot matrix) by 1-row liquid crystal display (LCD) unit that indicates printer status and selected items when the SelecType mode and One Touch mode are ON.

(2) One Touch Mode — LED 1

Settings described below are available when this light is ON.

| | |
|---------------|--|
| Paper Source: | Specifies the paper tray used to feed paper. |
| Page Size: | Specifies the size of the image to be formed. |
| Manual Feed: | Turns manual feed on and off. |
| Orientation: | Specifies the printing orientation: portrait or landscape. |

(3) One Touch Mode — LED 2

Settings described below are available when this light is ON.

| | |
|-------------------|--|
| BiRITech: | Sets BiRITech mode. |
| Copies: | Specifies the number of pages to be duplicated. |
| MP Tray Size: | Specifies the paper size fed from multipurpose tray. |
| Toner Saver Mode: | Turns Toner Saver mode ON and OFF. |

(4) SelecType Mode LED (Green Light)

The printer is in the SelecType mode when this light is ON.

(5) Continue LED (Yellow Light)

When this light is ON, it indicates an error has occurred that can be cleared by pressing the Continue button.

(6) DATA LED (Yellow Light)

ON: Indicates received data is stored in the printer and has not been printed out. The light, however, remains OFF if the stored data is not valid print data, but other data, such as control codes and commands. The light does not go OFF until data for remaining commands has been received.

OFF: There is no valid print data in printer memory.

Flashing: The printer is processing data.

(7) On Line LED (Green Light)

Describes whether or not the printer is ready.

ON: The printer is ready to receive data.

OFF: The printer is ready to receive data, but not to print yet.

(8) Menu

SelecType Mode:

Press this button to enter SelecType Mode. Each press scrolls through the menus available for SelecType mode. To scroll back to the previous menu, press the SelecType/Alt button while holding down Menu button.

One Touch Mode:

Used to select one of the settings available for the menu indicated above the button. Press the SelecType/Alt button while holding down the Menu button.

(9) Item

SelecType Mode:

Used to choose an item in the menu selected. Press repeatedly until the item to be selected is indicated on LCD. To scroll back to the previous menu, press the SelecType/Alt button while holding down the Menu button.

One Touch Mode:

Used to select a setting available for the menu indicated above this button. To scroll back to the previous menu, press the SelecType/Alt button while holding down the Menu button.

(10) Value

Used to shift to the item where the latest selection was made.

SelecType Mode:

Used to shift to the item changed by the previous setting and select a value (parameter). Press repeatedly until the value to be selected is indicated on the LCD. Press the SelecType/Alt and Value buttons simultaneously to scroll back the items.

One Touch Mode:

Used to select a setting available for the menu indicated above this button. Press the SelecType/Alt and Value buttons simultaneously to scroll back the options.

(11) Enter

Used to enter Status Sheet Printing mode.

SelecType Mode:

Pressed to confirm a new value or start executing a selected mode.

One Touch Mode:

Pressed to confirm a new setting.

(12) SelecType/Alt

Selects One Touch Mode 1 or 2. Press this button repeatedly to scroll modes in the order: SelecType Mode, One Touch Mode 1, One Touch Mode 2, and Normal Mode.

(13) Continue/Reset

If you press this button while the Continue LED is flashing, it clears the error. Pressing this button while the On Line LED is OFF puts the printer back in Ready status. Pressing this button while the On Line LED is OFF and the LCD displays a warning clears the warning. To reset the printer, press this button and Alt button simultaneously, and LCD displays RESET. If you hold down the buttons an additional 5 seconds, the LCD displays RESET ALL, and a warm boot starts.

(14) Form Feed

The printer prints received data stored in its buffer if this button is pressed while On Line LED is OFF and Data LED is ON. Dulex print is canceled and data is printed in the the single print mode.

(15) On Line

If this button is pressed when On Line LED is ON:

- Single-sided print: The printer goes off line immediately, and the page in process is ejected.
- Duplex print: The printer goes off line after printing both sides of one sheet, or two sheets, maximum.

The printer goes on line if this button is pressed when it's off line.

1.4.2 Panel Settings

This printer has two panel setting modes: One Touch mode^{*1} and the SelecType mode. One Touch mode is more limited but easier to use. This mode has direct access to specified items in the menu tree^{*2}, while the SelecType mode has to follow the fully branched out menu tree to reach a parameter. Therefore, descriptions for One Touch mode have been eliminated in this section. Once new settings are registered on EEPROM, they are not changed until the printer is turned off. See Table 1-20 for SelecType options.

*1: Changes made in One Touch mode only affect environments available in the currently selected interface. See the user's guide for details.

Table 1-19. SelectType Options

| Menus (Changed by MENU button) | Items (Changed by ITEM Button) | Values (Changed by ↑ or ↓ button) (Set by ENTER button) |
|--------------------------------------|-----------------------------------|--|
| TEST MENU | STATUS SHEET | |
| | LJ4 FONT SAMPLE | |
| | ESC/P 2 FONT SAMPLE | |
| | FX FONT SAMPLE | |
| | I239X FONT SAMPLE | |
| | PS STATUS SHEET* ¹ | |
| | PS FONT SAMPLE* ¹ | |
| | PS FACT SHEET* ¹ | |
| | Ext Printer Info* ²⁴ | |
| EMULATION MENU | Parallel B | LJ4 , FX, ESC/P 2, I239X, PS* ¹ , GL/2, Auto |
| | Parallel C | |
| | SERIAL* ^{2 15} | |
| | L/T* ² | PS* ¹ , GL2, Auto, LJ4 * ¹² , FX, I239X |
| | AUX* ⁶ | Same as parallel B |
| | ETHERNET | Same as parallel B |
| PRINTING MENU | PAPER SOURCE | Auto , MP, LC1, LC2* ³ |
| | PAGE SIZE | A4 * ⁴ , A3, A5, B4, B5, LT* ⁵ , HLT, LGL, GLT, GLG, B, EXE, F4, MON, C10, DL, C5, C6, IB5, CTM, A3+ |
| | ORIENTATION | Port , Land |
| | COPIES | 1 to 999 |
| | MANUAL FEED | OFF , ON |
| | RESOLUTION | 600 , 300 |
| | DUPLEX* ¹⁶ | OFF , ON |
| | BINDING* ¹⁶ | Long Edge , Short Edge |
| | START PAGE* ¹⁶ | Front , Back |
| TRAY SIZE MENU | MP TRAY SIZE | A4 * ⁴ , A3, A5, B4, B5, LT * ⁵ , HLT, LGL, GLT, GLG, B, EXE, F4, MON, C10, DL, C5, C6, IB5, A3+ |
| | LC1 SIZE* ¹⁴ | 250-sheet cassette A4, A3, A5, B4, B5, LT, HLT, LGL, GLG B, EXE, F4, 500-sheet cassette A4, LT |
| | LC2 SIZE* ^{3*14} | |

Table 1-19. SelecType Options (Continued)

| Menus | Items | Values | |
|-----------------|--|--|----------------------|
| CONFIG MENU | BiRITech | Medium , Dark, Off, Light | |
| | TONER SAVE | Off , On | |
| | DENSITY | 3,4,5,1,2 | |
| | TOP OFFSET | –9.0 to 0.0 to 99.0 mm in steps of 0.5 mm | |
| | LEFT OFFSET | –9.0 to 0.0 to 150.0 mm in steps of 0.5 mm | |
| | BACK SHIFT* ¹⁶ | 0 to 30 mm in steps of 1 mm | |
| | SIZE IGNORE | Off , On | |
| | AUTO CONT | Off , On | |
| | PAGE PROTECT | Auto , On | |
| | IMAGE OPTIMUM | Auto , On | |
| | PAPER TYPE | Normal , Thin, Thick, Trnsprnc | |
| SET UP MENU | INTERFACE | Auto , Parallel B, Parallel C, Serial, L/T* ¹⁵ , AUX* ⁶ | |
| | TIMEOUT | 5 to 60 to 300 | |
| | STND BY | Enable , Disable | |
| | LANG LANG SPRACHE LINGUA LENG SPRK SPROG TAAL LANG LING LANG | English Franais Deutch Italiano Espaol Svenska Dansk Nederi Suomi Portugus Option 1 to 8* ¹³ | |
| | PANEL LOCK* ¹⁷ | Off , On | |
| | PRINTER NAME | Off , On * ■■■■ F, E* * * ■■■ F | |
| | TONER* ¹⁴ | E* * ■■■ F, E* ■■■ F, E■■■■ F | |
| | PAGE COUNT* ¹⁴ | 0 to 99999999 | |
| | SelecType INIT | | |
| | PARALLEL B MENU | SPEED | Fast , Normal |
| | | BI-D | On , Off |
| BUFFER SIZE | | Normal , Maximum, Minimum | |
| PARALLEL C MENU | SPEED | Fast , Normal | |
| | BI-D | On , Off | |
| | BUFFER SIZE | Normal , Maximum, Minimum | |

Table 1-19. SelectType Options (Continued)

| Menu | Item | Available Options |
|----------------------|-------------------------|---|
| SERIAL MENU *2 | WORD LENGTH | 8 , 7 |
| | BAUD RATE | 9600 , 19200, 38400, 57600, 300, 600, 1200, 2400, 4800 |
| | PARITY | None , Even, Odd |
| | STOP BIT | 1 , 2 |
| | DTR | On , Off |
| | X-ON/X-OFF | On , Off, Robust |
| | BUFFER SIZE | Normal , Maximum, Minimum |
| L/T MENU*15 | BUFFER SIZE | Normal , Maximum, Minimum |
| AUX MENU*6 | BUFFER SIZE | Normal , Maximum, Minimum |
| LJ4 | FONT SOURCE | Resident , SIMM, Card, Download |
| | FONT NUMBER | 0 to available (Maximum, 65535) |
| | PITCH | 0.44 to 10.00 to 99.99 cpi in steps of 0.01 cpi |
| | HEIGHT | 4.00 to 12.00 to 999.75 pt in steps of 0.25 pt |
| | SYSTEM | Roman-8 , ECM94-1, 8859-2 ISO, 8859-9 ISO, IBM- US, IBM DN, PcMultiling, PcE.Europe, PcTk437, WiAnsi, WiE.Europe, WiTurkish, DeskTop, PsText, Velntemati, VeUS, MsPublishin, Math-8, PsMath, VeMath, PiFont, Legal, UK, ANSI ASCII, Swedish2, Italian, Spanish, German, Norweg1, French2, Windows, Pclcelandic*9, Pclt774*9, PcTurk1*9, PcPortugues*9, PcEt850*9, PcTurk2*9, PcCanFrench*9, PcS1437*9, OcNordic*9, 8859-3 ISO*9, 8859-4 ISO*9, WiBaltic*9, WiEstonian*9, WiLatvian*9, Mazowia*9, CodeMJK*9, BpBRASCII*9, BpAbicomb*9, PcGK437*9, PcGK851*9, PcGK869*9, 8859-7 ISO*9, WiGreek*9, Europe3*9, PcCy855*9, PcCy866*9, Pclt866*9, 8859-5 ISO*9, WiCyrillic*9, Bulgarian*9, OCR A*9, OCR B*9, Hebrew7*10, 8859-8 ISO*10, Hebrew8*10, PcHe862*10, Arabic8*10, PcAr864*10, 8859-6 ISO*10, OCR A*10, OCR B*10, PcTurk1*19, PcTurk2*19, PcGreek437*20, PcGk8869*20, 8859-7 ISO*20, PcCy855*21, PcCy866*21, Bulgarian*21, Mozawia*22, CodeMJK*22, OCR A*18, OCR B*18 |
| | FORM | 5 to 60 *5 to 64 *4 to 128 Lines |
| | SOURCE SYMSET *9,10,18 | 0 to 277 to 3199 |
| DEST SYMSET *9,10,18 | 0 to 277 to 3199 | |

Table 1-19. SelectType Options (Continued)

| Menu | Item | Available Options |
|---------|--------------------|---|
| GL2 | GLMODE | <u>GL</u> like, LJ4GL2 |
| | SCALE | <u>OFF</u> , A0, A1, A2, A3 |
| | ORIGIN | <u>CORNER</u> , CENTER |
| | PEN | <u>Pen0</u> , Pen1, Pen2* ⁴ to Pen16* ⁴ |
| | END | <u>Butt</u> , Square, Triangular, Round |
| | JOIN | <u>Mitered</u> , Miteredbeveled, Triangular, Round, Beveled, None |
| | PEN0 | 0.05 to <u>0.35</u> to 5.00 mm in steps of 0.05 mm |
| | PEN1 | 0.05 to <u>0.35</u> to 5.00 mm in steps of 0.05 mm |
| | PEN2* ⁴ | 0.05 to <u>0.35</u> to 5.00 mm in steps of 0.05 mm |
| | PEN3* ⁴ | 0.05 to <u>0.35</u> to 5.00 mm in steps of 0.05 mm |
| | PEN4* ⁴ | 0.05 to <u>0.35</u> to 5.00 mm in steps of 0.05 mm |
| | PEN5* ⁴ | 0.05 to <u>0.35</u> to 5.00 mm in steps of 0.05 mm |
| | PEN6* ⁴ | 0.05 to <u>0.35</u> to 5.00 mm in steps of 0.05 mm |
| ESC/P 2 | FONT | <u>Courier</u> , Roman, Sans-serif, Prestige, RomanT, SansH, Script, OCR B |
| | PITCH | <u>10 cpi</u> , 12 cpi, 15 cpi, Prop |
| | CONDENSED | <u>Off</u> , On |
| | T MARGIN | 0.40 to <u>0.50</u> to 1.50 inch in steps of 0.05 inch |
| | TEXT | 1 to <u>62</u> to <u>66</u> * ⁶ to available (Maximum, 111) lines |
| | CGTABLE | <u>Pc USA</u> , Italic, PcMultilin, PcPortugues, PcCanFrenc, PcNordic, PcTurkish2, Pc.E.Europe, BpBRASCII, BpAbicomp, PcS1437* ¹⁴ , PcTurkish1* ¹⁴ , Pclcelandic* ¹⁴ , 8859-9 ISO* ¹⁴ , Mazowia* ¹⁴ , CodeMIJ* ¹⁴ , PcGK437* ¹⁴ , PcGK851* ¹⁴ , PcGK869* ¹⁴ , 8859-7 ISO* ¹⁴ , PcCy855* ¹⁴ , PcCy866* ¹⁴ , Bulgarian* ¹⁴ , Hebrew7* ¹⁰ , Hebrew8* ¹⁰ , PcAr864* ¹⁰ , PcHe862* ¹⁰ |
| | COUNTRY | <u>USA</u> , France, Germany, UK, Denmark, Sweden, Italy, Spain1, Japan, Norway, Denmark2, Spain2, LatinAmeric, Kore, Legal |
| | AUTO CR | <u>On</u> , Off |
| | AUTO LF | <u>Off</u> , On |
| | BIT IMAGE | <u>Dark</u> , Light, BarCode |
| | ZEROCHR | <u>0</u> , Ø |

Table 1-19. SelecType Options (Continued)

| Menu | Item | Available Options |
|-------|---------------|---|
| FX | FONT | <u>Courier</u> , Roman, Orator S, Sans-serif, Prestige, Script , OCR B |
| | PITCH | <u>10 CPI</u> , 12 CPI, 15 CPI, Prop |
| | CONDENSED | <u>OFF</u> , ON |
| | T-MARGIN | 0.40 to <u>0.50</u> to 1.50 inch in steps of 0.05 inch |
| | TEXT | 1 to <u>62</u> * ⁵ to <u>66</u> * ⁴ to available lines (Maximum, 111) |
| | CG TABLE | <u>Pc USA</u> , Italic, PcMultilin, PcPortuguese, PcCanFrenc, PcNordic, PcTurkish2, Pc.E.Europe, BpBRASCII, BpAbicomp |
| | COUNTRY | <u>USA</u> , France, Germany, UK, Denmark, Sweden, Italy, Spain1, Japan, Norway, Denmark2, Spain2, LatinAmeric |
| | AUTO CR | <u>ON</u> , OFF |
| | AUTO LF | <u>ON</u> , OFF |
| | ZERO CHAR | <u>0,0</u> |
| | BIT IMAGE | <u>Dark</u> , Light, BarCode |
| I239X | FONT | <u>Courier</u> , Prestage, Gothic, Orator, Script, Presentor, Sans serif |
| | PITCH | <u>10 cpi</u> , 12 cpi, 15 cpi, 17 cpi, 20 cpi, 24 cpi, Prop |
| | CODE PAGE | 437, 850, 860, 863, 865 |
| | T.MARGIN | 0.30 to <u>0.40</u> to 1.50 inch in steps of 0.05 inch |
| | TEXT | 1 to <u>63</u> * ⁵ to <u>67</u> * ⁴ to available (Maximum, 111) lines |
| | AUTO CR | <u>Off</u> , On |
| | AUTO LF | <u>Off</u> , On |
| | ALT. GRAPHICS | <u>Off</u> , On |
| | BIT IMAGE | <u>Dark</u> , Light, BarCode |
| | ZEROCHR | <u>0,0</u> |
| | CHARACTER SET | <u>1</u> * ⁵ , <u>2</u> * ⁴ |

Notes: Underlined values in boldface show factory settings.

- *1: Appears only when the optional EPSONScript Level 2 Post Script ROM SIMM (C83226*) is installed.
- *2: Appears when the optional LocalTalk serial interface is installed in serial interface mode.
- *3: Appears when the optional lower cassette unit is installed.
- *4: Factory setting for Europe and Pacific.
- *5: Factory setting for North America.
- *6: Appears when Type B interface is installed.
- *7: Varies depending the cassettes installed.
- *8: Appears when DC1 font ROM SIMM or font card is installed.
- *9: Appears when NLSP Bitmap 2 Font ROM for LGC is installed.
- *10: Appears when NLSP Bitmap 2 Font ROM for HA is installed.
- *11: Appears when the printer is operated in GL-Like mode.
- *12: A default setting only when the optional EPSONScript Level 2 Post Script ROM SIMM (C83226*) is not installed.
- *13: Options are available when NLSP Font ROM or ROM SIMM is installed. Number of options available varies with NLSP Font ROM or ROM SIMM and options only up to 8 are indicated on LCD. When NLSP Font ROM or ROM SIMM in use has no status sheet resource on it, no option is given. English is used to indicate items and values in SelectType mode.
- *14: Total number of sheets printed is indicated and no selection can be made for this item.
- *15: Appears when the optional LocalTalk with serial interface is installed in LocalTalk interface mode.
- *16: Appears when the optional duplex unit is installed.
- *17: Doesn't appear on LCD.
- *18: Appears when NLSP Bitmap2 FONT ROM for OCR is installed.*²³
- *19: Appears when NLSP EDG OEM Scalable FONT ROM for Greek is installed.*²³
- *20: Appears when NLSP EDG OEM Scalable FONT ROM for Greek is installed.*²³
- *21: Appears when NLSP EDG OEM Scalable FONT ROM for Cyrillic is installed.*²³
- *22: Appears when NLSP EDG OEM Scalable FONT ROM for Latin is installed.*²³
- *23: When the value for Symset in LJ4 Menu is set to this symbol set, other values for Font Source and Font Number change automatically to "Resident" and "0". Therefore, note that this symbol set is used when Font Source and Font Number are properly set to the values which support this symbol set.
- *24: Appears when NLSP Font ROM has status sheet on it.

1.4.3 Service Mode

This printer has the following 5 service modes.

- Hexadecimal dump mode
- EEPROM Initialize mode
- Format Flash Card
- Page Counter clear
- Flash ROM update

1.4.3.1 Hexadecimal Dump Mode

- Button: Form Feed button with Power Switch On.
- Indication on LCD: HEX Dump (This message appears after RAM check is completed.)
- Function: Converts received data into hexadecimal format (from 00 to FF) and prints it out. Functions with any interface.
- Prints:
 1. Data received
 2. Hex Dump List
 3. ASCII character list. If a received code is not a printable ASCII character, the printer prints a period (.) in the ASCII column.
 4. The page number
- Exit: Press the Reset button to perform the warm boot operation. Turn the printer off , then back on.

- Notes:**
1. Interfaces switch only as a result of the timeout function. This change resets the data buffer to 0 and the page number to 1.
 2. When hexadecimal dump mode is functional, SelecType and One Touch modes are not available.

1.4.3.2 EEPROM Initialize Mode

EEPROM initialize operations are required only when the main board or EEPROM is replaced, or when these operations are specified in this manual.

- Buttons: On Line + Continue + Menu with Power Switch On.
- Indication on LCD: Format Nvram
- Function: Resets all user settings to the factory default settings and clears the printer status information (page counter and jam counter).

1.4.3.3 Format Flash Card

- Buttons: SelecType + Item+ Value + Enter with Power Switch On.
- Indication on LCD: Formatting Card
- Function: Erases all information on Flash Card. It functions with Flash Card, SRAM card, and EEPROM card.

Note: Be sure not to turn the printer off while a card is formatting.
 " Write Erro Card" is indicated instead when the IC card inserted is not supported or "Write Protect" is On.

1.4.3.4 Page Counter Clear

- Buttons: On Line + Menu + Item with Power Switch On.
- Function: Resets the page counter to 0.

1.4.3.5 Flash ROM Update

- Button:
 1. Press OnLine, Menu, Item, and Value buttons with Power Switch On.
 2. Press Item, Value, and Enter buttons while "Program Device" is indicated.
 3. Data is transmitted after "Please Send Data" is indicated.
- Function: Updates PROM.

1.4.4 Display of Messages

This section describes messages on LCD. They are divided into 4 categories; status messages, error messages, warning messages, and service call error messages.

1.4.4.1 Status Messages

The LCD normally indicates the printer's status and the software mode.

Table 1-20. Status Messages

| Message | Description and Corrective Measure |
|---------------|---|
| Reset All | Warm boot is in process. Printer replaces this message with "Reset" while performing reset after warm boot is completed . |
| Reset | Reset is in process. |
| Reset to Save | Printer status: SelecType is changed while another job is printing. LED status: On-Line LED goes OFF. Measures: Press either Continue or On-Line to recover. Note that the setting made in SelecType mode is not valid until current the job is complete. To make a new setting take immediate effect, perform a reset or warm boot. However, this clears all print data. |
| Warming Up | The printer is warming up. |
| Standby | The printer is in energy saver status. |
| Ready | The printer is ready to receive new data. |
| Writing Card | The printer is storing data to the PCMCIA card. Be sure to avoid turning off the printer off or removing the card during this operation. The printer automatically starts a warm boot when the process is completed. |
| Writing SIMM | The printer is storing data to the Flash simm. Be sure to avoid turning off the printer off or removing the card during this operation. The printer automatically starts a warm boot when the process is completed. |
| EPL-N2000 | Printer name is indicated in place of "Ready" when "Printer Name" is set to ON in SelecType mode. |

1.4.4.2 Error Messages

If any of the following errors occurs, it will be displayed on the LCD. The error must be cleared immediately, using the measures shown in the following tables.

Table 1-21. Error Messages

| Error Messages and Descriptions | | |
|---------------------------------|--|----------------------------------|
| Operator Error Card | | |
| Status | A card is inserted or removed while the printer is ON. This message is not displayed when removal of an IC card creates a service call error. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | Start a warm boot, or turn the printer off then back on again. | |
| Duplex Unit Open | | |
| Status | The duplex unit cover is open. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | Close the duplex unit cover. | |
| Check Duplex P- Size | | |
| Status | [SelcType: Size Ignore = OFF in the Config menu] The size of the paper loaded does not match the page size selected. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | <ol style="list-style-type: none"> 1. Place the selected paper size in the paper cassette. 2. Open the top cover or duplex cover to remove the paper. 3. Close the cover. Then the printer automatically resumes printing of the jammed page. The paper is loaded from the same paper entrance. | |
| Paper Jam | | |
| Status | A paper jam has occurred in the paper path, except at the paper entrance. This message is also displayed when paper is stuck at both the paper entrance and in the paper path. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | <ol style="list-style-type: none"> 1. Open the top cover and remove the paper. 2. Close the cover. Then the printer automatically resumes printing. | |

Table 1-21. Error Messages (Continued)

| Error Messages and Descriptions | | |
|---------------------------------|---|----------------------------------|
| Feed Jam | | |
| Status | Paper has not been fed properly from the specified paper entrance. If paper is also jamming in the paper path, it is considered a Paper Jam error. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before |
| Measure | <ol style="list-style-type: none"> 1. Remove the paper from the paper entrance. 2. Open the top cover to make sure there is no paper jammed in any paper path, and then close it. Always be sure to open the top cover. Otherwise the error does not clear. 3. The printer automatically resumes printing of the jammed page after warming up. Paper is loaded from the same paper entrance. | |
| Paper Jam in Duplex | | |
| Status | A paper jam has occurred in the duplex unit. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | <ol style="list-style-type: none"> 1. Open the cover of the duplex unit and remove the paper. 2. Close the cover. Then the printer automatically resumes printing of the jammed page after warming up. Paper is loaded from the same paper entrance. | |
| Printer Open | | |
| Status | The top cover is open. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | Close the cover. | |
| Turn Paper | | |
| Status | The printer does not support the orientation of the paper currently loaded in LC1 or LC2. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | The error is automatically cleared if the paper is reloaded in the correct orientation. This error does not occur when the MP tray is used. | |

Table 1-21. Error Messages (Continued)

| Error Messages and Descriptions | | |
|---|--|----------------------------------|
| Manual Feed bbbb | | |
| Status | The printer has received data when Manual Feed is set to ON through the SelecType mode or a command. | |
| LED | On Line | OFF |
| | Continue | Flashing |
| | Form Feed | Keeps the same status as before |
| Measure | <p>This error can be cleared using any of the following methods:</p> <ol style="list-style-type: none"> 1. Press the On Line button after placing "bbbb" size paper in the MP tray. Note that the Check Paper Size error does not occur, regardless of whether Size Ignore = ON in the Config menu. A Paper Out error does not occur despite paper empty condition in the MP Tray. 2. Press the Continue button. In this case, the printer starts printing after the paper source is selected, ignoring Manual Feed = ON. A Paper Out or Check Paper Size occurs when there is no paper in the selected paper source or the size of paper in the selected paper source does not match the size specified. 3. Perform a reset or warm boot. | |
| Paper Out aaaa bbbb*¹ | | |
| Status | <p>This error can be caused by any of the problems listed below:</p> <ol style="list-style-type: none"> 1. There is no paper loaded in the paper source indicated by "aaaa"*² 2. No paper is loaded in any paper source. [SelecType: Manual Feed = OFF] <p>The actual message for "aaaa" is the paper source from which paper was fed in the previous printing. "LC1" is displayed instead if no paper is detected in any paper source when the printer is turned on.</p> <ol style="list-style-type: none"> 3. There is no paper in "aaaa"*² when Manual Feed = ON has been canceled by pressing the Continue button when printing is started. <p>*1: The actual display for "bbbb" is the paper size selected using SelecType mode or the printer driver. *2: The actual display for "aaaa" is the paper source from which paper is specified to be fed.</p> <p>MP = Multipurpose tray LC1 = Lower paper cassette LC2 = Optional lower paper cassette</p> | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |

Table 1-21. Error Messages (Continued)

| Error Messages and Descriptions | | |
|---|---|--|
| Paper Out aaaaa bbbbb^{*1} | | |
| Measure | <ol style="list-style-type: none"> When "aaaa" is LC1 or LC2: The error is cleared by inserting the "bbbb" size paper into cassette "aaaa". When "aaaa" is MP: The error is cleared by inserting the "bbbb" size paper in MP tray. If the warning error "Check Paper Size" does not appear after printing, it means that the Paper Size for MP tray in the SelecType menu has been changed automatically to "bbbb." | |
| Toner Out | | |
| Staus | Toner is nearly out, which may cause print quality to deteriorate. If the you press the button, the printer outputs another sheet, but afterward the same message returns on the panel. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | <ol style="list-style-type: none"> Replace the toner cartridge with a new one. Press the Continue button for a temporary recovery. | |
| Paper Set aaaa bbbb | | |
| Staus | [SelecType: Size Ignore = OFF] Paper loaded in paper source "aaaa" does not match the selected page size. | |
| LED | On Line | OFF: Size Ignore = OFF ON: Size Ignore = ON |
| | Continue | Flashing |
| | Form Feed | Keeps the same status as before. |
| Measure | <p>[SelecType: Auto Cont = OFF in the Config menu] The error is cleared with either of the following methods:</p> <ol style="list-style-type: none"> Press the Continue button after inserting the "bbbb" size paper into the "aaaa" paper source. Then the printer starts feeding "bbbb" size paper from the "aaaa" paper source. Press the Continue button without replacing the paper. If there is more than 2 pages of data remaining, the printer discontinues the job after printing 1 page and the same error occurs. <p>[SelecType: Auto Cont = ON in the Config menu] The error is automatically cleared without replacing paper after a set period of time. Then the printer resumes feeding paper from the "aaaa" paper source. In this case, when there is data for 2 pages or more, the printer indicates the same error message before each page.</p> | |

Table 1-21. Error Messages (Continued)

| Error Messages and Descriptions | | |
|---------------------------------|---|--|
| Print Overrun | | |
| Status | The time required to develop an image exceeds the print speed because the current data is too complicated. | |
| LED | On Line | OFF: Size Ignore = OFF ON Size Ignore = ON |
| | Continue | Flashing |
| | Form Feed | Keeps the same status as before. |
| Measure | <p>This error can be cleared using any of the following methods: [SelectType: Auto Cont = OFF in the Config menu]</p> <ol style="list-style-type: none"> 1. Press the Continue button. If there is memory available, the printer resumes printing of the page containing the error, using the memory left. This is only attempted once, and if it results in the same error, the printer omits the page containing the error and proceeds to the following page. When the error occurs on the reverse side of a duplex page, both sides are reprinted. 2. Perform reset or warm boot. <p>[SelectType: Auto Cont = ON in the Config menu]</p> <ol style="list-style-type: none"> 3. The error is cleared automatically after a specific amount of time. If there is still memory left, the printer resumes printing on the page containing the error, using the memory left. This is only attempted once and if the same error occurs, the printer omits the page with the error and proceeds to the following page. When the error occurs on the reverse side of a duplex page, both sides are reprinted. 4. Set Page Protect = ON in the printer driver. 5. Set Device Resolution = 300 dpi in the printer driver. 6. Add more memory. | |
| Mem Overflow | | |
| Status | Memory has run out during a process, and the printer stops the current task. | |
| LED | On Line | OFF: Auto Cont = OFF in the Config menu ON: Auto Cont = ON in the Config menu |
| | Continue | Flashing |
| | Form Feed | Keeps the same status as before. |
| Measure | See Page 1-43 | |

Table 1-21. Error Messages (Continued)

| Error Messages and Descriptions | | |
|---------------------------------|--|----------------------------------|
| Mem Overflow | | |
| Measure | <p>[SelectType: Auto Cont = OFF in the Config menu] The error is cleared by using any of the following methods:</p> <ol style="list-style-type: none"> Press the Continue button. Results vary by case, as described below. If the error occurred on the first side of a duplex page, the paper is ejected leaving the reverse side blank. Data for the reverse side is printed on the reverse side of the next sheet. If the error is caused by the lack of image buffer memory, the printer prints only the data already processed. If the error occurred during writing of data for fonts or macros, the printer continues the current task ignoring the data written when the error occurred. Reset the printer or perform warm boot. <p>[SelectType: Auto Cont = ON in the Config menu]</p> <ol style="list-style-type: none"> The error is automatically cleared after a specific amount of time. Add more memory. This error can be caused when the memory used for fonts is too large. In such a case, turn off the printer and remove one of the above devices . | |
| Duplex Mem Overflow | | |
| Status | In duplex printing mode, there was not enough memory left for the data on the reverse side of the sheet. The paper was ejected after the first side was printed. Then an error message was indicated. | |
| LED | On Line | OFF |
| | Continue | Flashing |
| | Form Feed | Keeps the same status as before. |
| Measure | <p>[SelectType: Auto Cont = OFF in the Config menu]</p> <ol style="list-style-type: none"> Press the Continue button to resume printing of data for the reverse side on the next sheet. Reset the printer or perform warm boot. <p>[SelectType: Auto Cont = ON in the Config menu]</p> <ol style="list-style-type: none"> The printer resumes printing automatically after a specific amount of time. Data for the reverse side is printed on the reverse side of the next sheet. | |
| Illegal Aux I/F Card | | |
| Status | The optional I/F card inserted in the Type-B slot cannot be used with this printer. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | Turn the printer off, remove the optional card, and then turn the printer back on. | |

Table 1-21. Error Messages (Continued)

| Error Messages and Descriptions | | |
|--|--|----------------------------------|
| Illegal Card | | |
| Status | An IC card that has been inserted will not work with this printer. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | <ol style="list-style-type: none"> 1. Turn the printer off and remove the card. Then turn the printer back on. 2. Remove the IC card with the printer on to make the Continue LED flash. Then press the Continue button while the Continue LED is flashing. The printer automatically starts a warm boot. | |
| Illegal I/F Module | | |
| Status | LocalTalk/Serial Module installed is not available. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | Turn off the printer and remove the LocalTalk/Serial module. | |
| Write Error Card | | |
| Status | This error can be caused by any of 3 situations described below: <ol style="list-style-type: none"> 1. No data can be written onto the card. 2. Writing is not completed properly. 3. The card is not inserted. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | <ol style="list-style-type: none"> 1. Turn the printer off and remove the card. Then turn the printer back on. 2. Remove the IC card with the printer on to make the Continue LED flash. Then press the Continue button while the Continue LED is flashing. The printer automatically returns to normal status. 3. Perform a Warm boot. | |

Table 1-21. Error Messages (Continued)

| Error Messages and Descriptions | | |
|---------------------------------|--|----------------------------------|
| Write Error SIMM | | |
| Status | This error can be caused by any of 3 situations described below: 1. No data can be written onto the SIMM. 2. Writing is not completed properly. 3. The SIMM is not inserted. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | 1. Turn the printer off and remove the card. Then turn the printer back on. 2. Remove the IC card with the printer on to make the Continue LED flash. Then press the Continue button while the Continue LED is flashing. The printer automatically returns to normal status. 3. Perform a Warm boot. | |
| Change Card Battery | | |
| Status | Backup battery life on the PCMCIA card has ended. | |
| LED | On Line | OFF |
| | Continue | OFF |
| | Form Feed | Keeps the same status as before. |
| Measure | Turn off the printer and remove the card to replace the battery. Then reinsert the card. This error occurs in all the memory cards, such as SRAM cards, which have a backup battery installed. | |

1.4.4.3 Warning Messages

If any of the following warning errors occurs, it is displayed on the LCD. The printing process itself is not affected by any of the warning messages, which is soon replaced by a Ready message.

Table 1-22. Warning Messages

| Warning Messages and Descriptions | | |
|-----------------------------------|---|----------------------------------|
| Image Optimum | | |
| Status | The printer could not print at the density selected, due to lack of memory, and it simplified the print image. | |
| LED | On Line, Continue, Form Feed | Keeps the same status as before. |
| Measure | <ol style="list-style-type: none"> 1. Clear the warning message by pressing the Continue button. 2. Reset the printer or perform warm boot to discontinue data processing. | |
| Toner Low | | |
| Status | Toner left has dropped to the specific amount. It's detected by the toner sensor in the engine. | |
| LED | On Line, Continue, Form Feed | Keeps the same status as before. |
| Measure | <ol style="list-style-type: none"> 1. Press the Continue button to clear the warning. 2. Replace the toner cartridge with a new one. | |
| Card Battery Low | | |
| Status | A backup battery in a PCMCIA card is low. | |
| LED | On Line, Continue, Form Feed | Keeps the same status as before. |
| Measure | Replace the backup battery with a new one. | |
| Check Paper Size | | |
| Status | [Size Ignore = OFF in Config menu] This warning is given when the size of the paper loaded and the selected page size do not match. When using MP tray, the value for MP Tray Size in the Tray Size SelecType menu is set to the Page Size, if this message does not appear on the LCD. The printer, however, does not always detect size differences when a particular size of paper is loaded. | |
| LED | On Line, Continue, Form Feed | Keeps the same status as before. |
| Measure | <ol style="list-style-type: none"> 1. Press the Continue button to clear the warning. 2. Reset the printer or perform warm boot. * When this message is displayed, printing occasionally results in a size of paper that was not specified. | |

Table 1-22. Warning Messages (Continued)

| Warning Messages and Descriptions | | |
|-----------------------------------|---|----------------------------------|
| Check Serial I/F | | |
| Status | This warning is given after detection of an error such as a framing error, parity error, overrun error, or break character error when the serial I/F is installed. Data sent from serial I/F is ignored while the warning is indicated and it does not stop until a warm boot is performed. During this condition, however, other printer jobs and data sent from other than Serial Interface are not interfered. | |
| LED | On Line, Continue, Form Feed | Keeps the same status as before. |
| Measure | Perform an warm boot. | |
| Menus Locked | | |
| Status | This warning is given when Panel Lock is set to On in EPL mode and EEPROM cannot store new settings. This message is indicated under any of the circumstances described below: 1. Menu, Item, Value, and Enter buttons are pressed in One Touch mode. 2. Enter switch is pressed in SelecType mode. | |
| LED | On Line, Continue, Form Feed | Keeps the same status as before. |
| Measure | Press any of the switches. | |
| Duplex Print Was Off | | |
| Status | In duplex mode, the printer discontinues printing and indicates this message under any of the circumstances described below: 1. CTM-size paper is selected. 2. The paper type selected is other than Normal. 3. An envelope size (MON, C10, DL, C5, C6) is selected as the paper size. 4. The duplex unit is not installed. 5. Paper size, paper source, and paper type specified for two sides are different. 6. The paper size selected is A3+. | |
| LED | On Line, Continue, Form Feed | Keeps the same status as before. |
| Measure | 1. Press the Continue button to clear the warning. 2. Reset the printer or perform a warm boot. | |

Table 1-22. Warning Messages (Continued)

| Warning Messages and Descriptions (Continued) | | |
|--|--|----------------------------------|
| Format Error Card | | |
| Status | Data can be written onto the card inserted, but the card hasn't been formatted. This message can be ignored when the card is new. If the card, however, has already data stored, the card is under either of following conditions: 1. Data wasn't written properly. 2. The memory stored is damaged. In such cases, write data again or turn off the printer to remove the card. | |
| LED | On Line, Continue, Form Feed | Keeps the same status as before. |
| Measure | 1. Clear the message by pressing Continue switch. 2. Turn off the printer and remove the card. | |
| Format Error SIMM | | |
| Status | Data can be written onto the SIMM installed, but the SIMM hasn't been formatted. This message can be ignored when the SIMM is new. If the SIMM, however, has already data stored, the SIMM is under either of following conditions: 1. Data wasn't written properly. 2. The memory stored is damaged. In such cases, write data again or turn off the printer to remove the card. | |
| LED | On Line, Continue, Form Feed | Keeps the same status as before. |
| Measure | 1. Clear the message by pressing Continue switch. 2. Turn off the printer and remove the SIMM. | |

1.4.4.4 Messages at Power On

Table 1-23. Power On Messages

| Status Messages and Description | |
|---------------------------------|--|
| ROM Check | |
| Status | System ROM being checked. |
| RAM Check XX . XMB | |
| Status | System RAM being checked. " RAM Check XX . XMB OK" is indicated when RAM check is completed. If memory is added, be sure that "XX.X" match the size of the added RAM memory. |
| Self Test | |
| Status | Self Test, Reset being performed. |

1.4.4.5 Service Call Error Messages

A service call error is an error that has to be recovered by a qualified service person. Table 1-25 describes the indications on LCD. For code descriptions, refer to Chapter 5.

Table 1-24. Service Call Error Messages

| Service Call Error Messages | |
|-----------------------------|---|
| Service Req efff | |
| Status | The printer detects an error that may not be recovered by end users. e: Error Type Codes E: Error related to the engine. C: Error related to the controller. ffff: Error code (Refer to Chapter 5.) |
| LED | On Line, Continue, Form Feed On |
| Measure | Ask the end user to turn the printer off, then back on again. If the same message still appears, note the error code and make a service call. |

1.4.5 Printer Sharing

This section describes printer sharing. This printer has two methods of printer sharing: port fixed mode and auto sense mode. These modes are selected through SelecType.

1.4.5.1 Port Fixed Mode

When the printer is in port fixed mode, only one interface port is active. Data from other port is ignored. The interface to be used can be selected through SelecType.

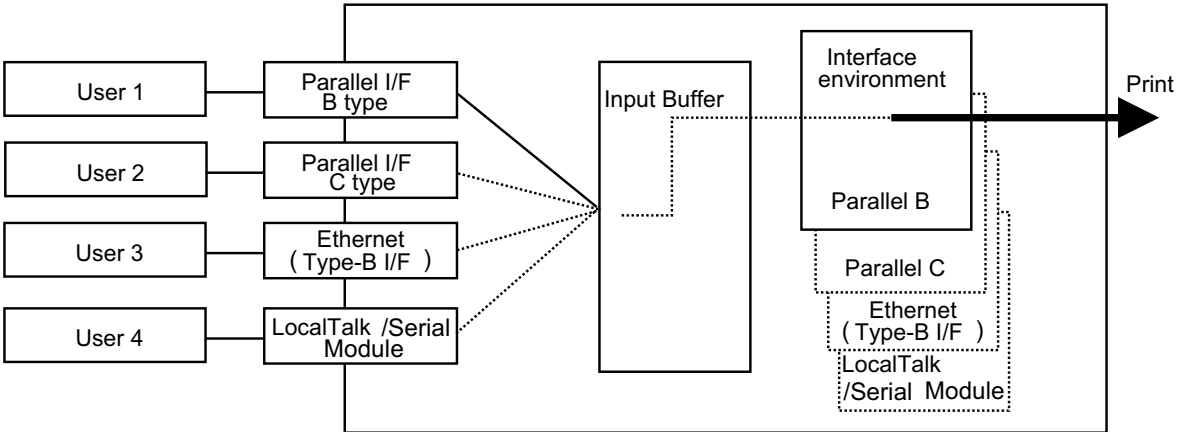


Figure 1-6. Interface Port Fixed Mode

1.4.5.2 Auto Sense Mode

This printer can be connected to a maximum of 4 interfaces at a time. When the printer is in Auto Sense Mode, any interface, standard or optional, that receives data first will print first. Each interface has its own values that are selected through SelecType.

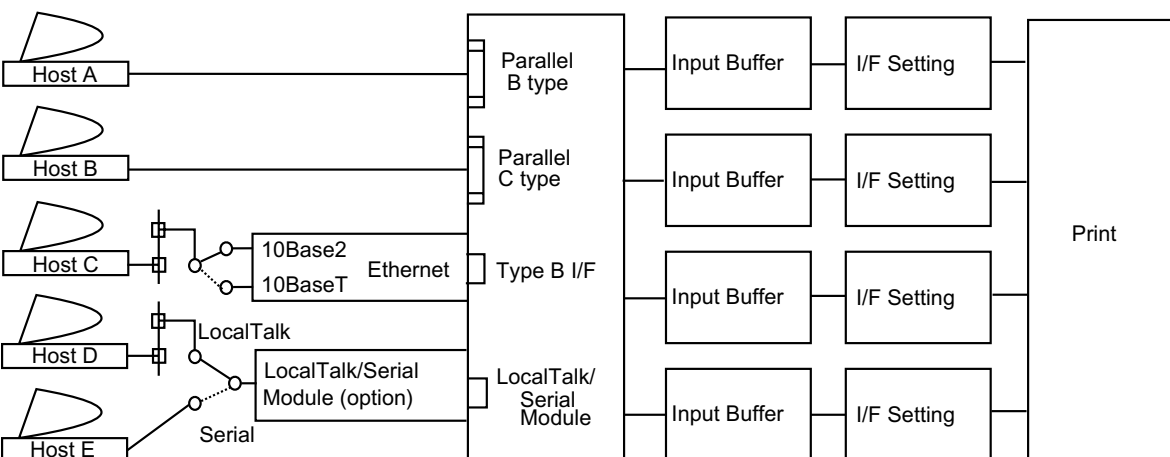


Figure 1-7. Interface Auto Sense Mode

1.4.6 Controller RAM Status

RAM on the controller of this printer uses dynamic memory allocation to make the best use of the memory. Therefore, no portion is rigidly allocated for user-defined settings such as font download, form overlay, and buffer size, and the total amount of memory available changes depending on new values.

When data exceeds memory capacity during a process, the error message Mem Overflow appears on the LCD. In this case, more memory needs to be added. You can occasionally prevent the error by decreasing memory buffer size.

1.4.7 EJL (Epson Job Control Language)

This printer supports EPSON's original EJL. This system allows users to access printer setting modes through commands sent by the computer. This mode is especially beneficial to users who operate printers through the network.

1.4.8 BiRITech (Bi Resolution Improvement Technology)

This printer has BiRITech, which is used to smooth out jagged edges of lines or shapes. The resolution, with this technology, has been improved to control dot formation in the main scan at approximately 1200 dpi, and it provides printing of a high quality.

Note: Using BiRITech may possibly cause print quality to deteriorate with meshed patterns or special graphic images. You can avoid this by setting BiRITech to OFF in SelecType.

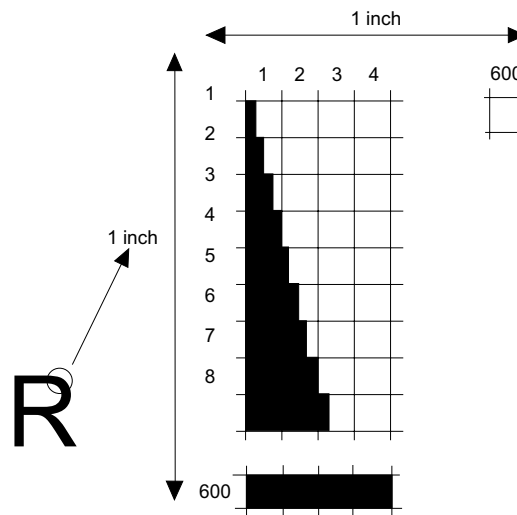


Figure 1-8. BiRITech Function

1.4.9 PGI (Photo and Graphics Improvement)

PGI enhances the print quality of halftones and tone gradations, generally used in photographic and graphic images. Compared with conventional systems, which use one white or black dot as the minimum unit, PGI technology divides a single dot into 3 parts for a more precise image. Therefore, the amount of data required for this technology is twice as large as the previous method.

1.4.10 Toner Saver Mode

Toner saver mode can cut toner consumption to half normal use. The printer saves toner by substituting a gray shade, formed with reduced dots, for the black inside characters. The upper and right edges are reinforced with full black lines. Use of this mode, however, is limited to output that does not require good print quality.

Table 1-25. Toner Saver Mode

| Toner Saver Mode | Edge Reinforcement | Halftone/ Full Black |
|------------------|------------------------------------|--|
| Off | All edges | Full black |
| On | Upper and right edge ^{*1} | Halftone made of 2 dots out of 4 X 4 dots. |

*1: Toward the orientation in which image is laid, regardless of the direction paper is fed.

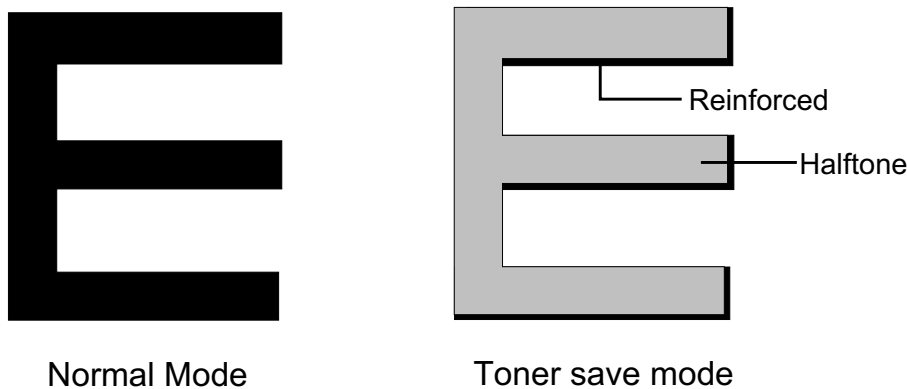


Figure 1-9. Toner Save Mode

1.4.11 Precaution for Power Off

This printer has an EEPROM installed on the main controller to store user default settings . If the printer is turned off while the printer is writing new data to the EEPROM, that new data will be lost, and this may cause an error the next time the printer is powered on. To avoid this, do not turn off the printer until the message Ready is indicated on the LCD.

1.5 MAIN COMPONENTS

To simplify maintenance and repair, the main components of the EPL-N2000 have been designed for easy removal and replacement. The main components are:

- | | |
|---|---------------------------------|
| <input type="checkbox"/> C207 MAIN board | Main control board |
| <input type="checkbox"/> Control panel | |
| <input type="checkbox"/> PWB-A board | Engine controller circuit board |
| <input type="checkbox"/> PWB-E board | Power supply unit |
| <input type="checkbox"/> PWB-F board | High-voltage supply unit |
| <input type="checkbox"/> Print head unit assembly | |
| <input type="checkbox"/> Fusing unit | |
| <input type="checkbox"/> Transfer unit | |
| <input type="checkbox"/> Paper takeup roller unit | |
| <input type="checkbox"/> Registration roller unit | |
| <input type="checkbox"/> Drive unit | |
| <input type="checkbox"/> Imaging cartridge | |
| <input type="checkbox"/> Cassette unit | Lower cassette unit |

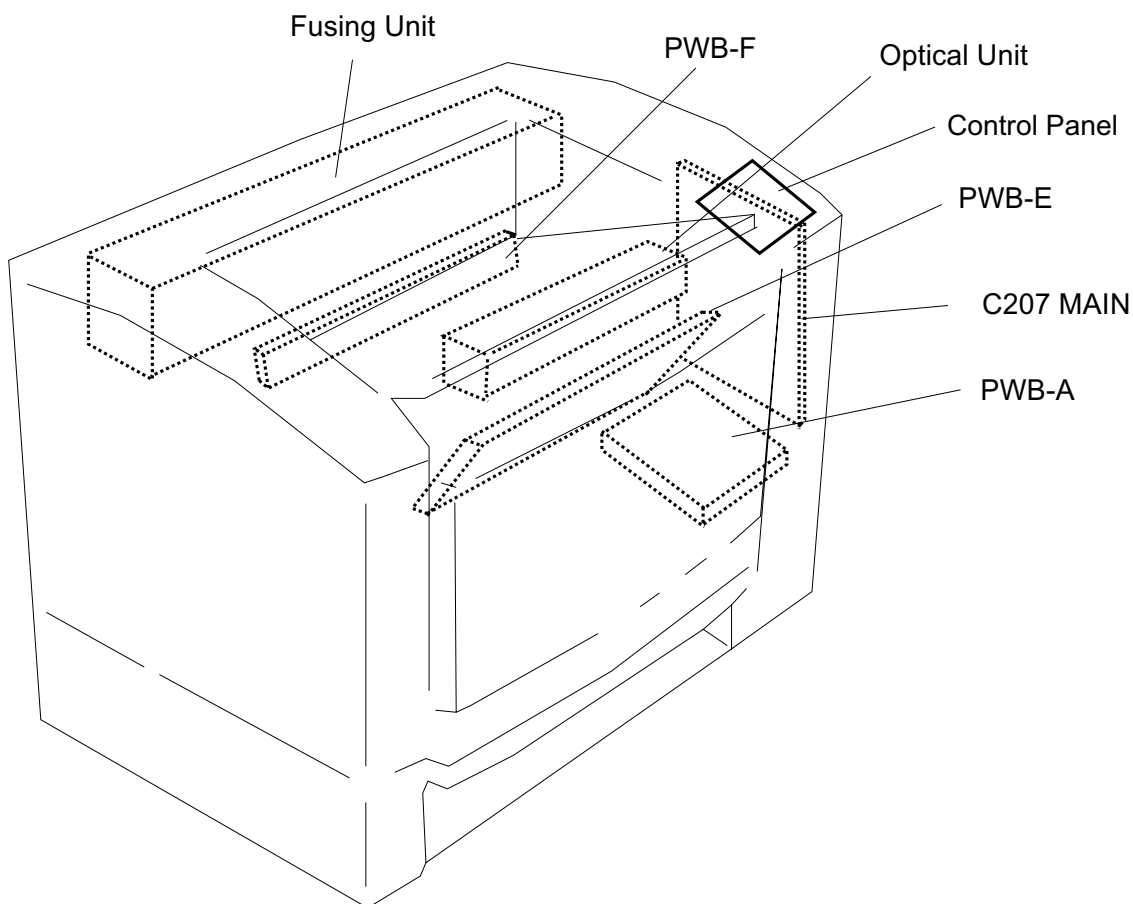


Figure 1-10. Main Component Layout

1.5.1 Main Controller (C207 MAIN Board)

The C207 MAIN board is the main controller board for the EPL-N2000.

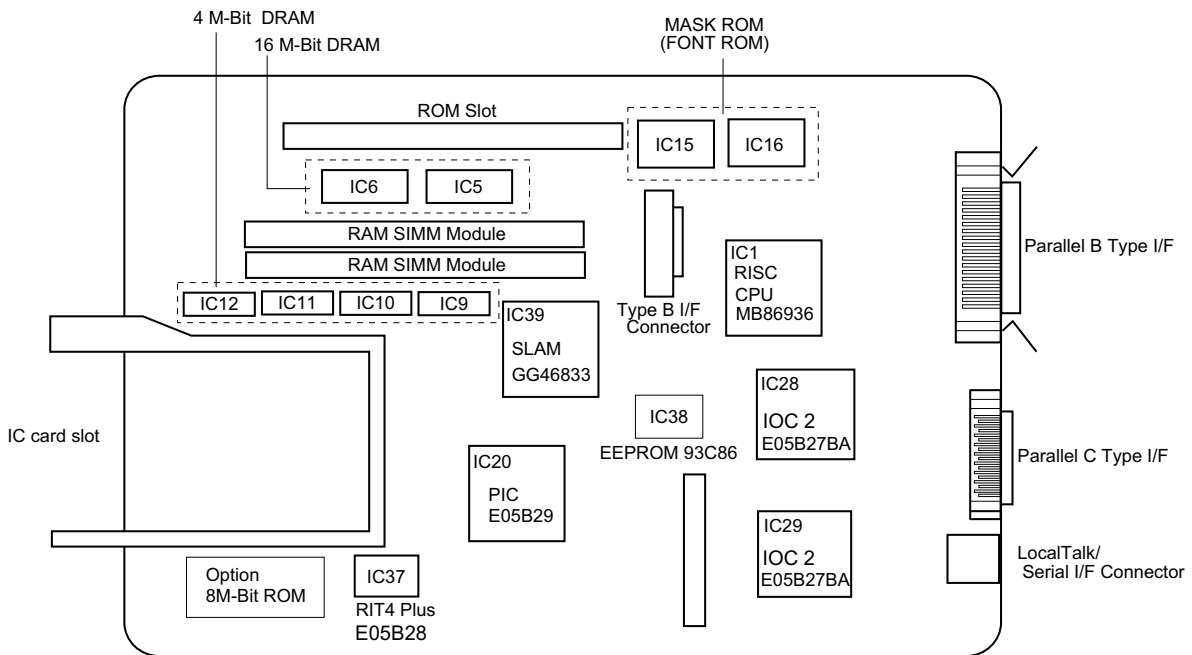


Figure 1-11. C207 MAIN Board

1.5.2 PWB-A Board

This unit is the engine control board. The engine is driven by the commands from the C207 MAIN board, including information from the sensors.

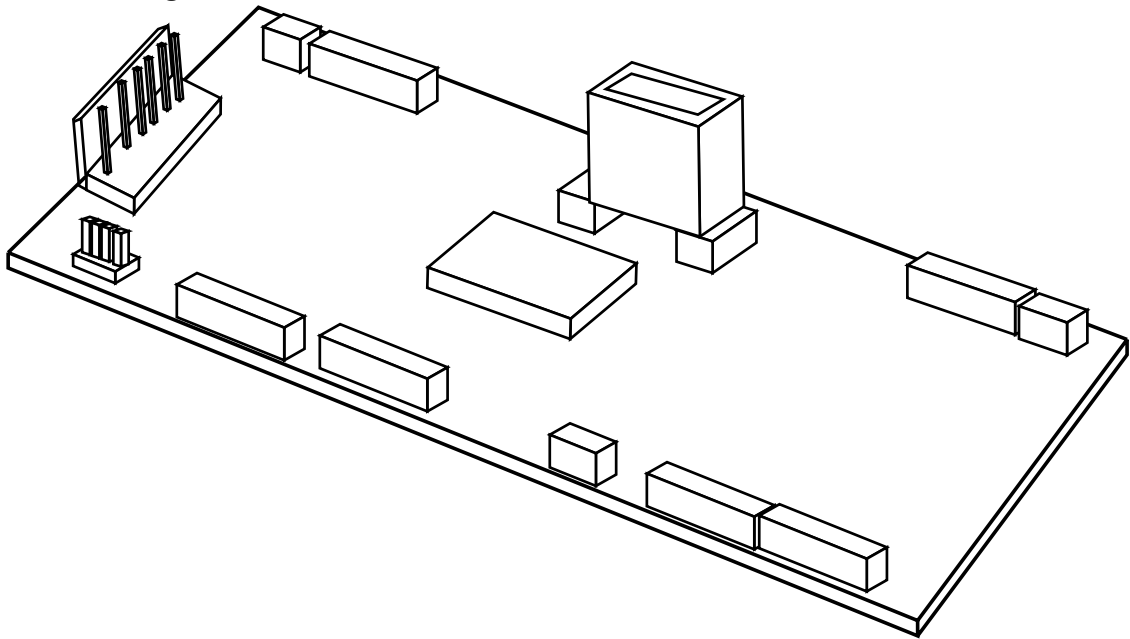


Figure 1-12. PWB-A Board

1.5.3 PWB-E Board

PWB-E board is the power supply board, which converts the AC line voltage into +24 and 5 VDC voltages. This board also supplies AC line voltage to the fusing unit to heat the heater lamp.



Never touch variable volumes RV1 and RV2. They are for factory use only.

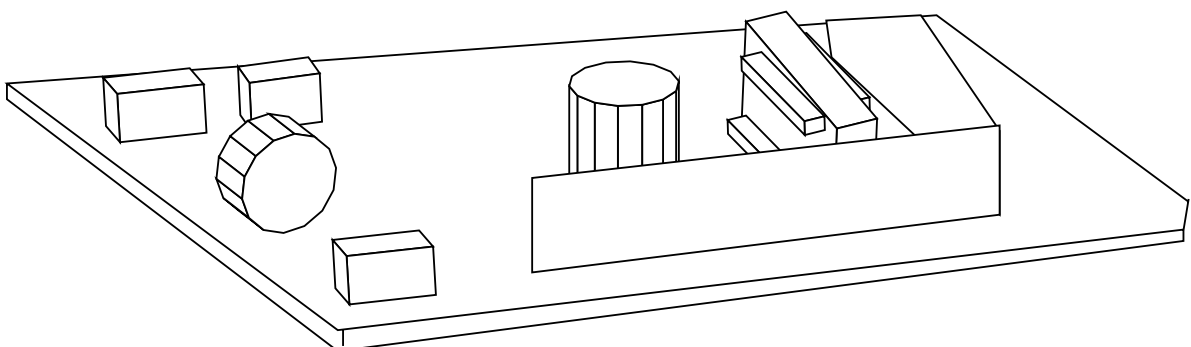


Figure 1-13. PWB-E Board

1.5.4 PWB-F Board Unit

The PWB-F is the high-voltage supply circuit board. It applies +24 VDC to the development bias, OPC drum charge bias, and image transfer bias.

Never touch variable volumes VR1, VR2, VR3, VR5, VR6. They are for factory use only.

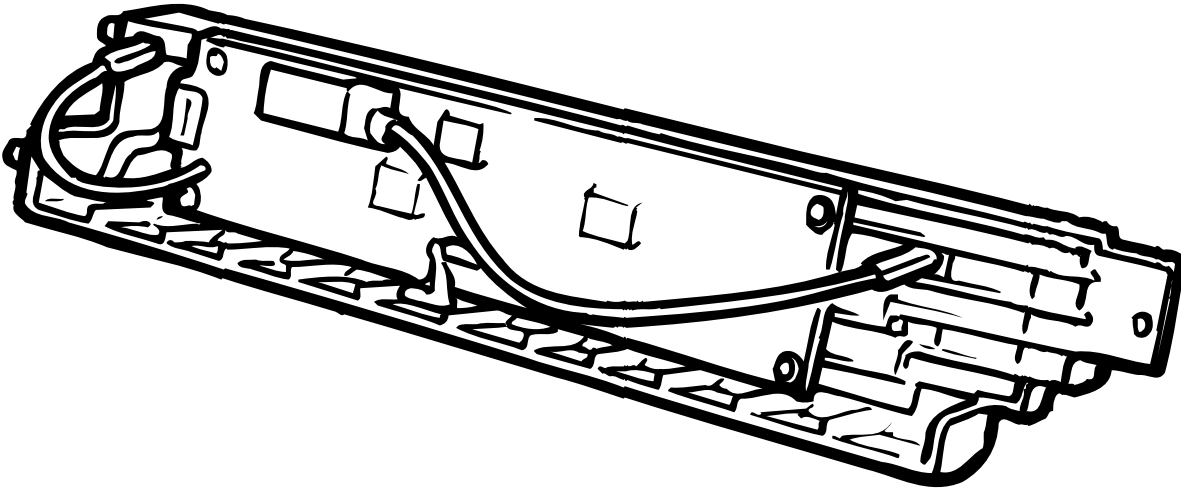


Figure 1-14. PWB-F Board

1.5.5 Paper Takeup Roller Unit

This unit is used to take up paper from a paper tray or cassette.

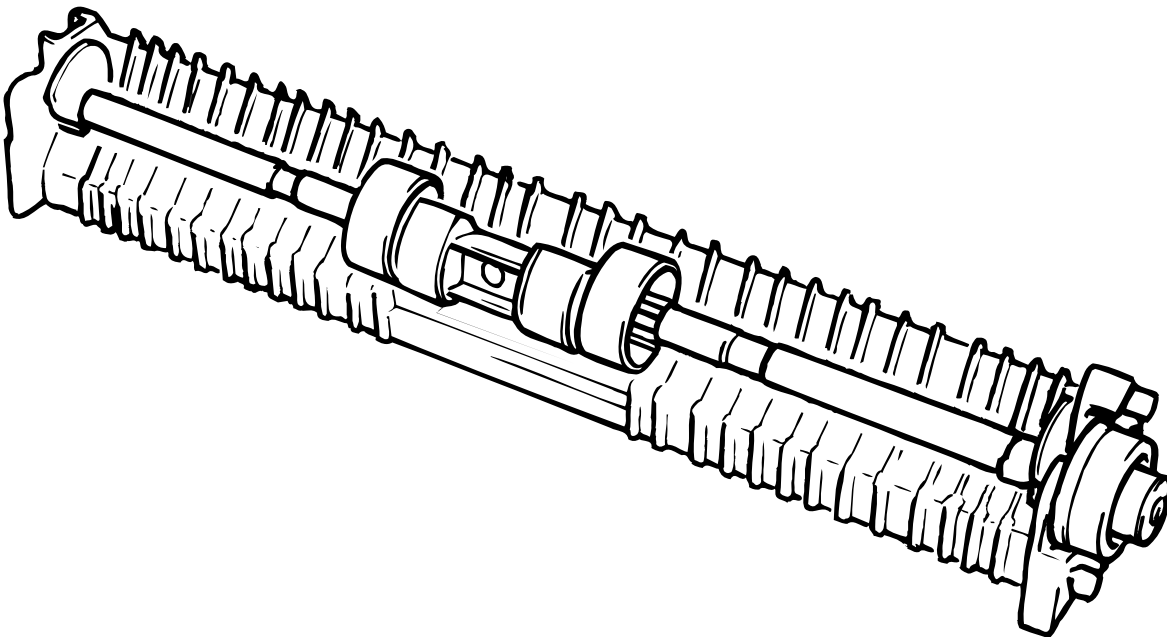


Figure 1-15. Paper Takeup Roller

1.5.6 Registration Roller Assembly

This unit is used to prevent paper skew prior to transfer process. Paper reaches the register, pushes against the register, and then is pushed back to the correct position by its natural bounce.

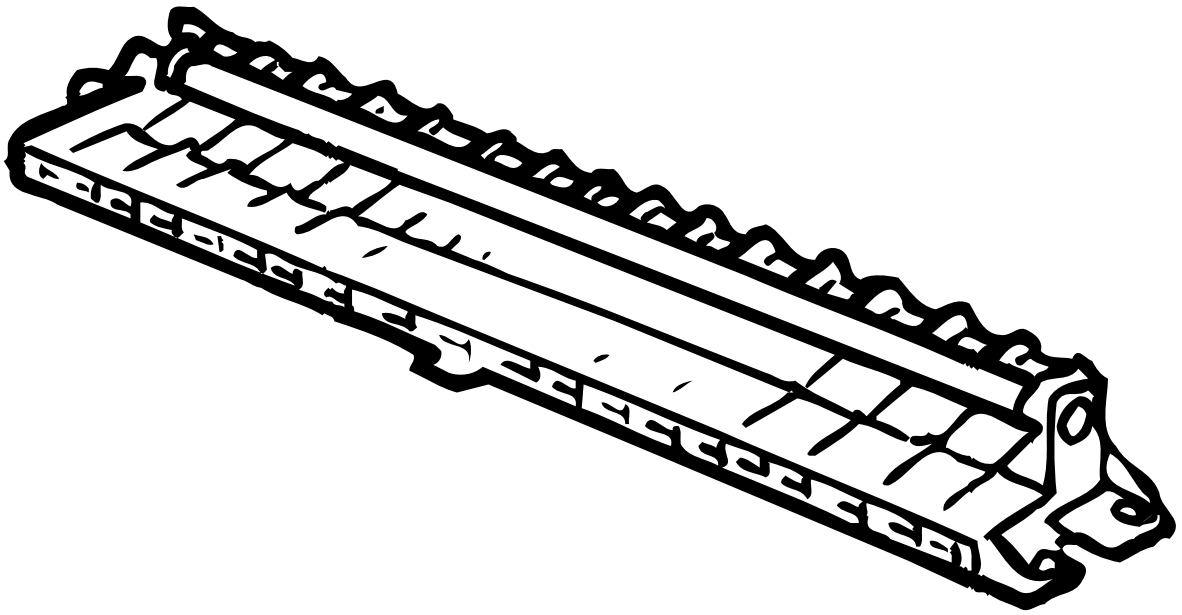


Figure 1-16. Registration Roller

1.5.7 Transfer Unit

The transfer unit transfers the toner image from the surface of the PC drum onto the paper. When paper is transported across the transfer roller and PC drum, the transfer roller, located on the reverse side of the paper, applies a positive electric charge to the paper to attract the toner image from the drum to the paper.

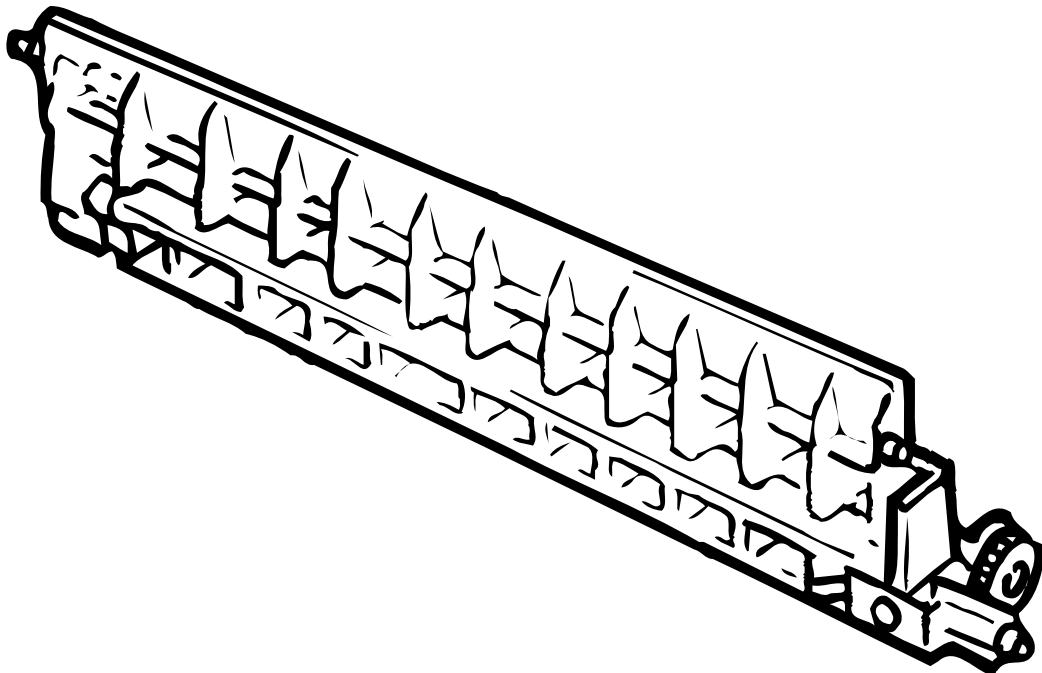


Figure 1-17. Transfer Unit

1.5.8 Print Head Unit (Optical Unit)

The Print Head unit consists of the laser diode (semi-conductor laser), the polygon motor which drives the polygon mirror for laser scanning, mirrors, and the lenses. The optical unit emits the laser beam onto the surface of the PC drum via the polygon mirror, mirrors, and lenses to produce a latent electrostatic image.

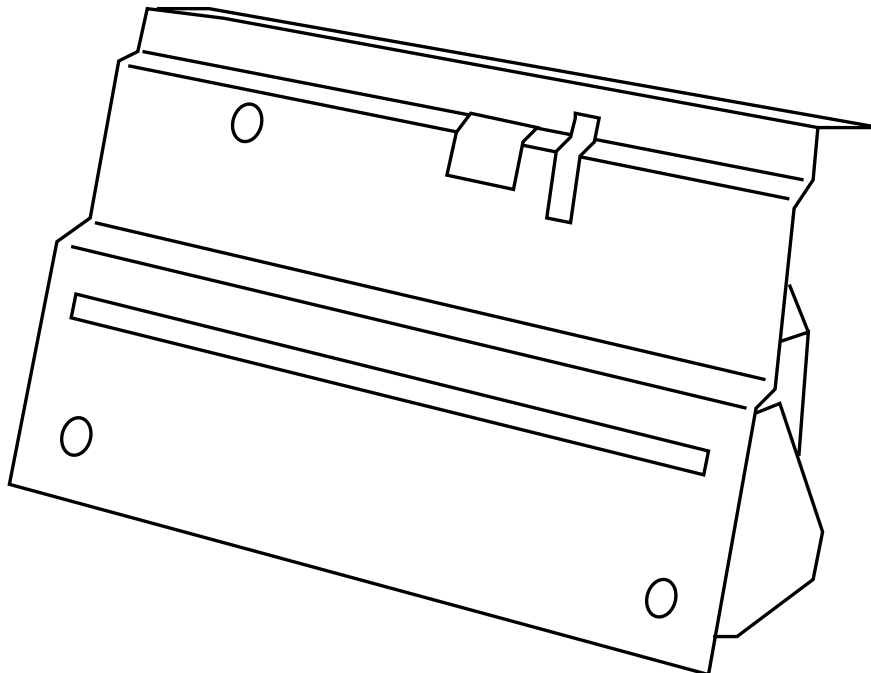


Figure 1-18. Print Head Unit

1.5.9 Fusing Unit

The fusing unit, which consists of the roller and heater lamp, fixes toner images onto the paper, using heat and pressure. The thermistor is installed in the unit for heat control and the thermostat takes over the job when the heat control fails. .

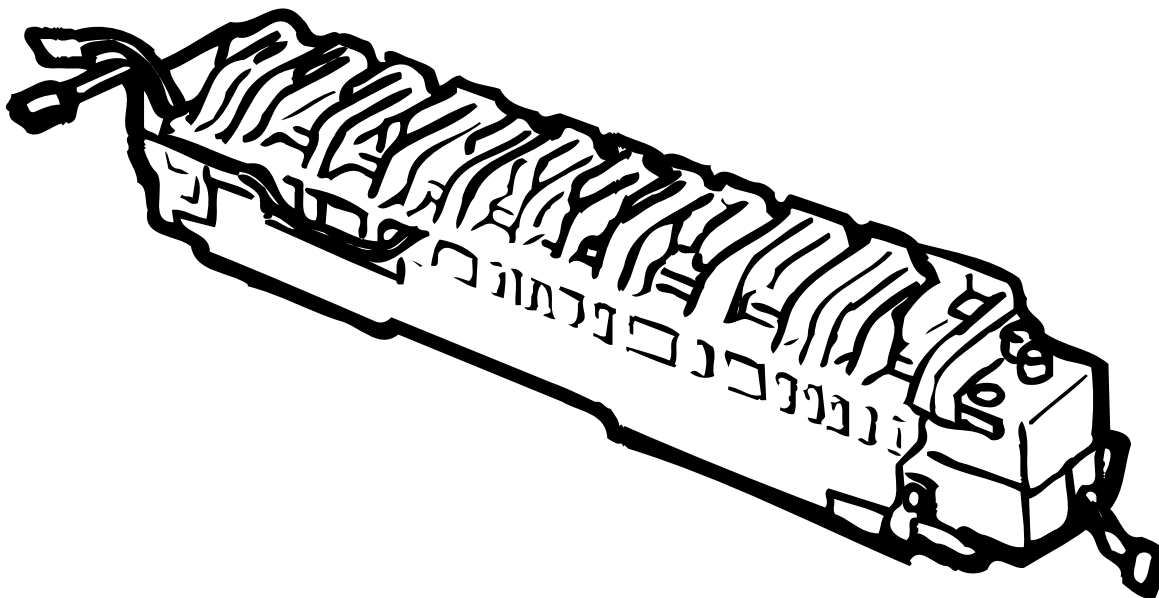


Figure 1-19. Fusing Unit

1.5.10 Drive Unit

The drive unit, which consists of the main motor and a number of transmitting gears, drives the paper transport rollers, Imaging cartridge, and fusing unit. The registration roller clutch, paper takeup solenoid, and interlock switch are installed inside the unit.

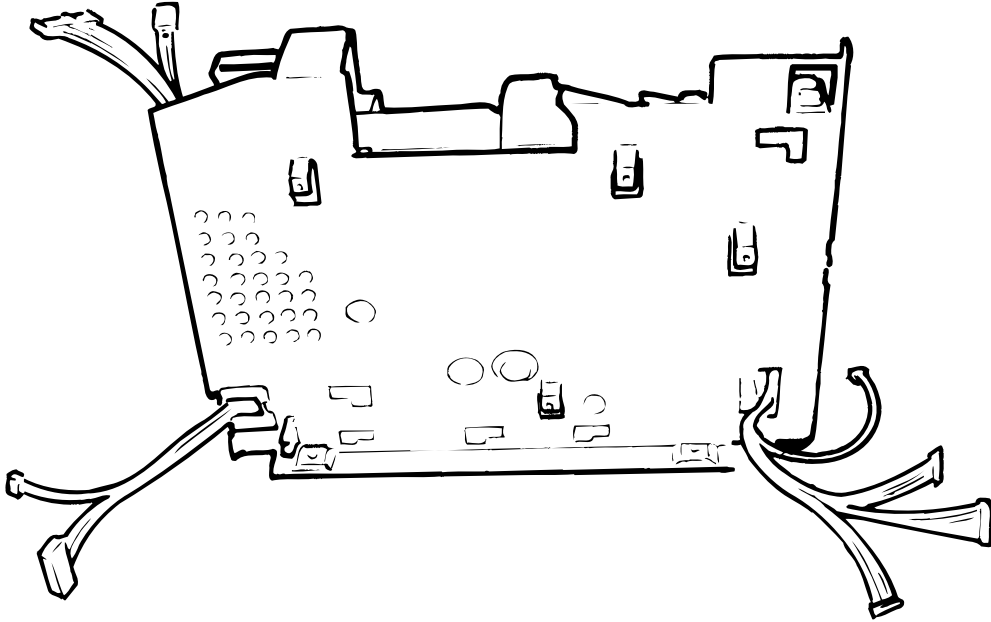


Figure 1-20. Drive Unit

1.5.11 Imaging cartridge

The Imaging cartridge contains mechanisms to control charging, developing, and cleaning. The toner tank is installed inside the cartridge, and the whole cartridge must be replaced when toner runs out. The cartridge has a fuse attached, which the printer can use to detect whether or not the cartridge is new.

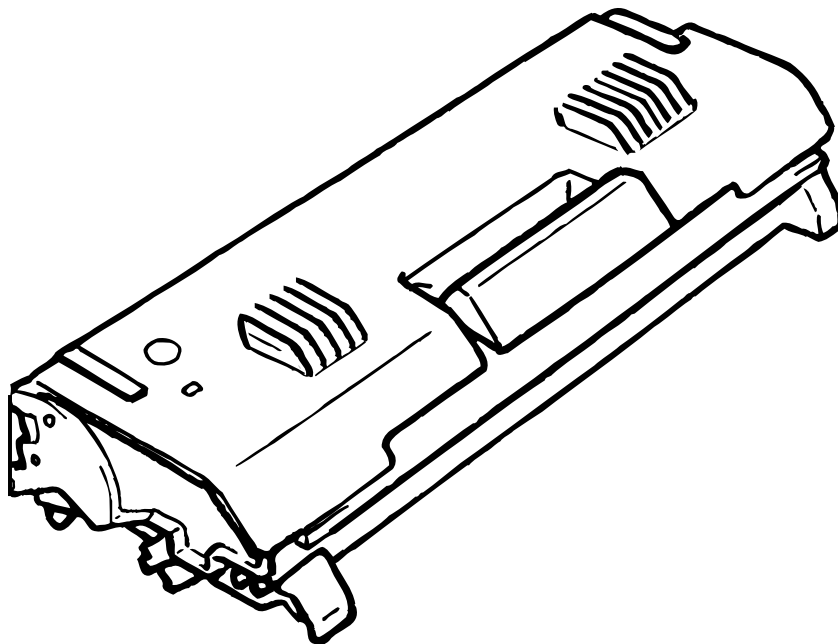


Figure 1-21. Imaging Cartridge

1.5.12 Cassette Unit

The cassette unit is used to feed paper from a cassette into the printer. The paper empty sensor detects paper outs, and the paper near empty sensor detects the amount of paper remaining in the cassette.

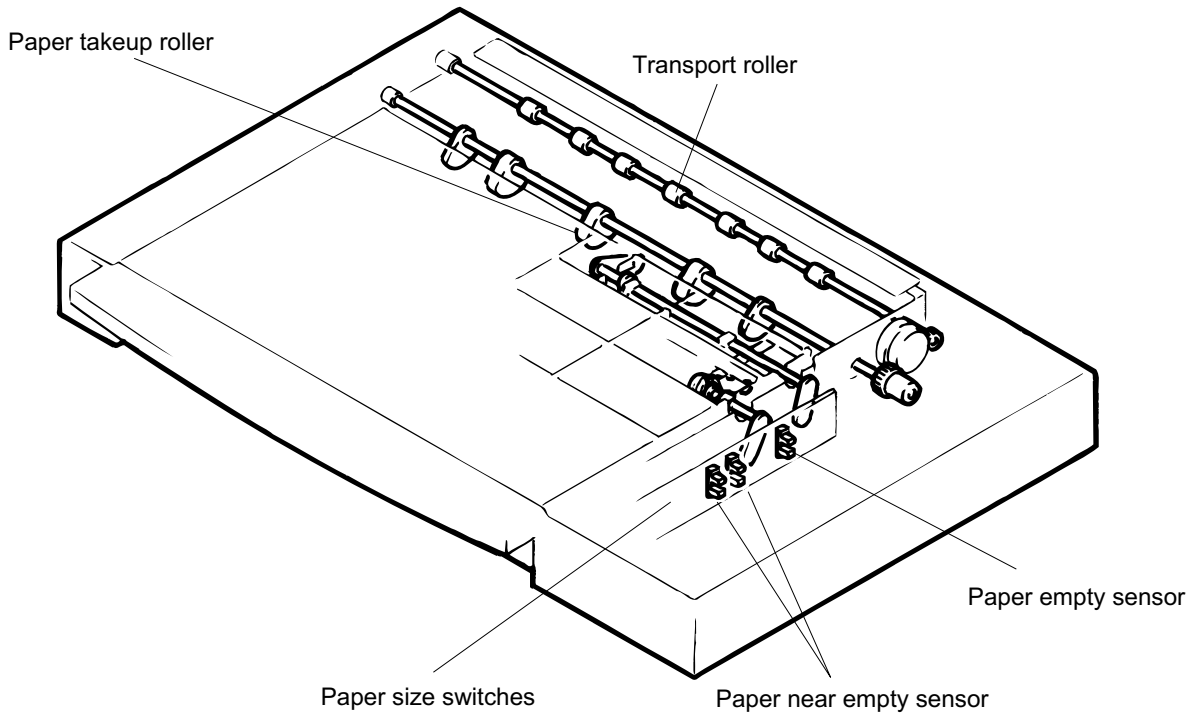


Figure 1-22. Cassette Unit

CHAPTER 2 OPERATING PRINCIPLES

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2.1 Engine Operation

This section describes the functions and operating principles of the EPL-N2000 engine.

2.1.1 Printing Process

The whole printing process for this printer is divided into the seven stages described in Table 2-1.

Table 2-1. Printing Process for the EPL-N2000

| Steps | Process | Description |
|-------|-------------|--|
| 1 | Charging | Charges the surface of the PC drum with static electricity. A rayon brush is used. |
| 2 | Exposure | The laser beam emitted from the laser unit produces an electrostatic latent image on the surface of the PC drum. |
| 3 | Development | Toner is fed through the sleeve roller to the surface of the PC drum to produce a visible toner image. |
| 4 | Transfer | The transfer roller transfers the toner image from the surface of the PC drum onto the paper, using an electrical charge applied from the transfer roller. |
| 5 | Separating | The electrode discharges the paper to separate it from the drum. |
| 6 | Fusing | Toner image is fixed on the paper with heat and pressure. |
| 7 | Cleaning | The cleaning blade clears toner off the PC drum and transfer roller. |

Figure 2-1 shows the locations and name of the main engine components and the paper paths.

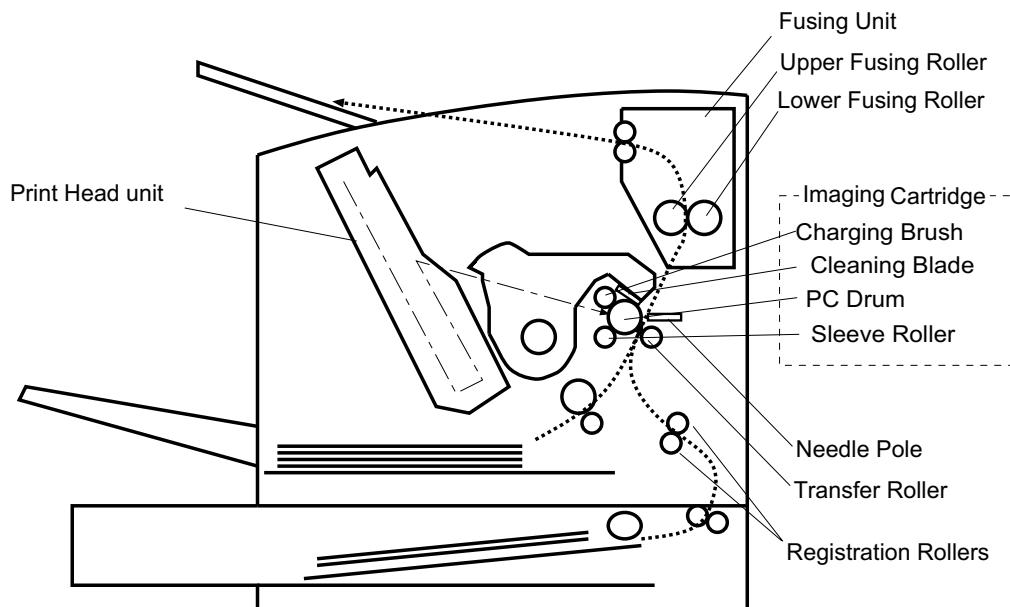


Figure 2-1. Mechanism Parts and Paper Paths for Main Printing Process

2.1.1.1 Charging Process

In the charging process, the high voltage unit applies negative DC voltage as the bias voltage to the rayon charging brush. Then, the PC drum is evenly charged with the negative electric charge applied from the charging brush.

| | |
|---------|---------|
| DC bias | -1150 V |
|---------|---------|

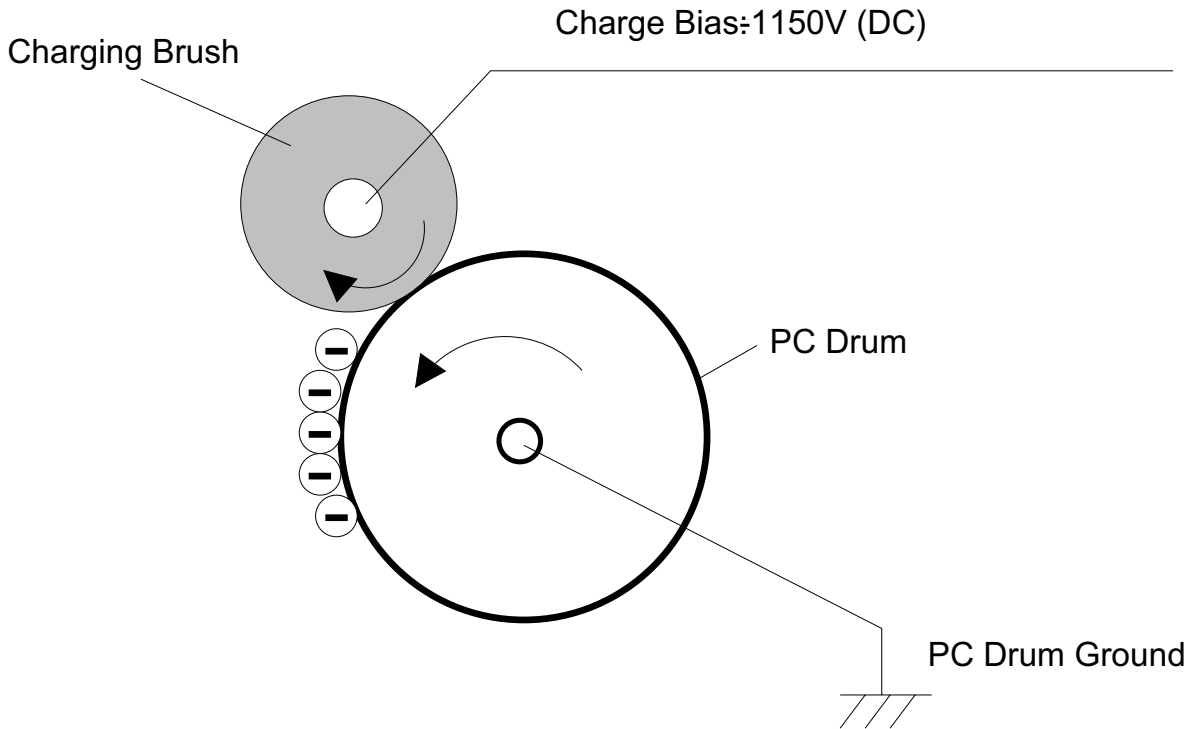


Figure 2-2. Charging Process

2.1.1.2 Exposure Process

In the exposure process, the laser unit emits laser beams onto the PC drum surface to create an electrostatic latent image. There is a polygon mirror installed inside the laser unit. The mirror, which is rotated by the scanner motor, reflects laser beams from the laser diode toward the drum, on which the laser beams run, scanning from one edge to the other. There is a sensor called SOS, or Start Of Scan, sensor attached in the laser unit. The laser beam is emitted onto the sensor to detect the starting point for scanning of each line. It correctly times the illumination of the laser diode with the rotation of the polygon mirror.

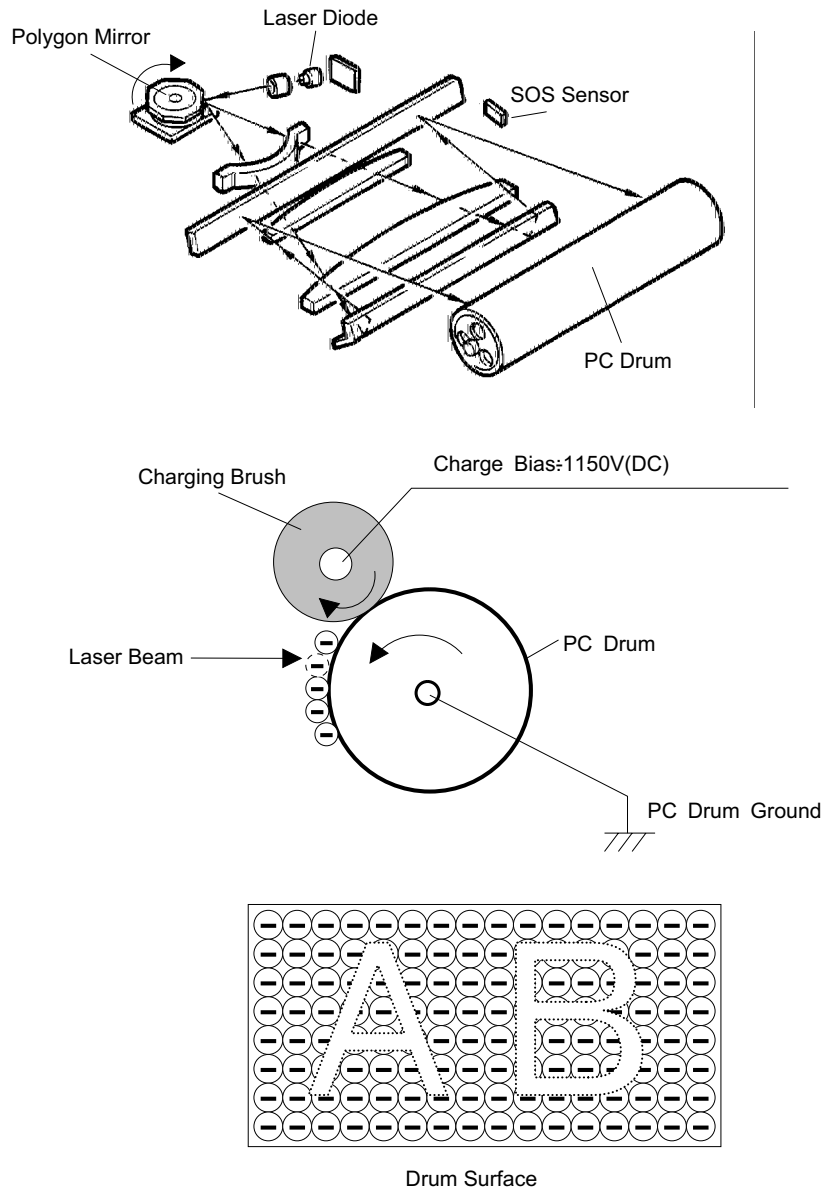


Figure 2-3. Exposure Process

2.1.1.3 Developing Process

Paper goes through this process to convert electrostatic image produced through the charging and exposure processes into visible image. It is accomplished using toner and 3 bias voltages; developing bias, toner bias, and seal bias. Developing bias feeds toner evenly on the sleeve roller. The amount of toner fed onto the roller is controlled by developing bias, which enables the printer to adjust printing tones.

| | |
|-----------------|-------------------------|
| Developing bias | -300 V (-220 to -330 V) |
| Toner bias | -550 V |
| Seal bias | -249 bias |

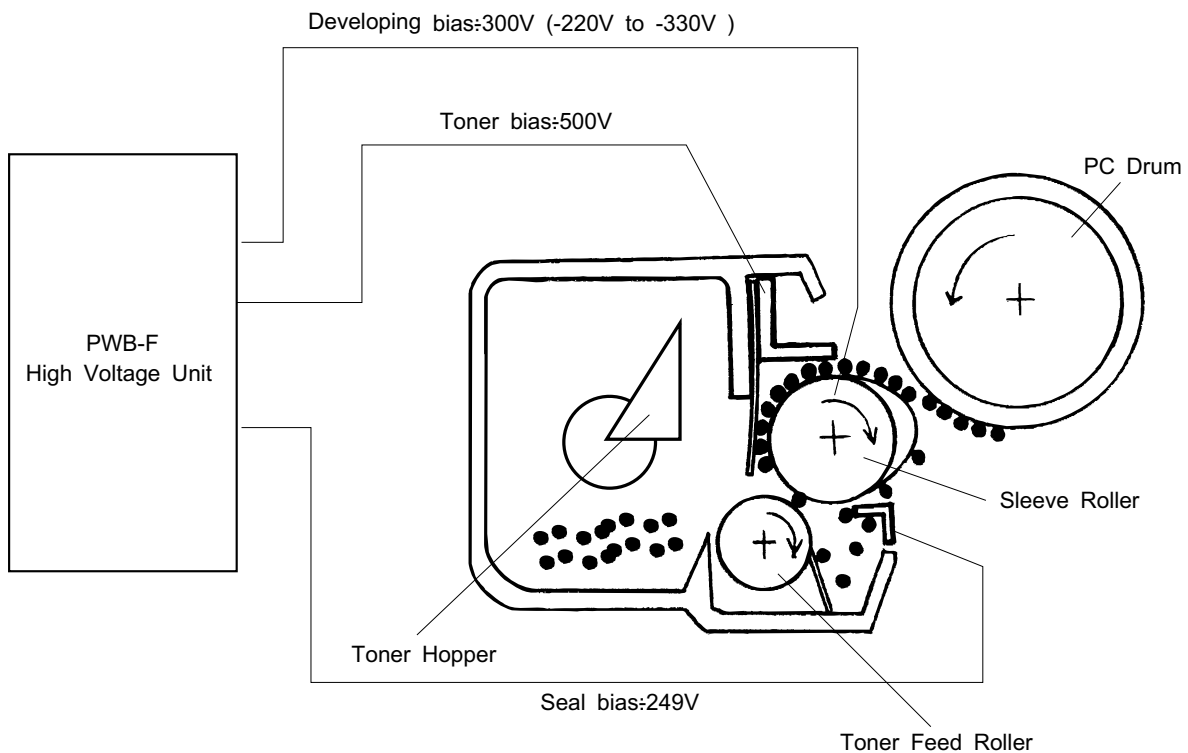


Figure 2-4. Developing Process

2.1.1.4 Transfer Process

In the transfer system, toner image created on the PC drum through the developing process is transferred to the paper. The roller transfer system is used for this printer. When the paper goes through the PC drum and the transfer roller, the roller provides the paper with positive voltage applied from the high voltage unit. Then, the toner image on the drum transfers to the paper being attracted by the positive voltage. The needle pole located above the roller is used to collect the remaining static electricity on the paper.

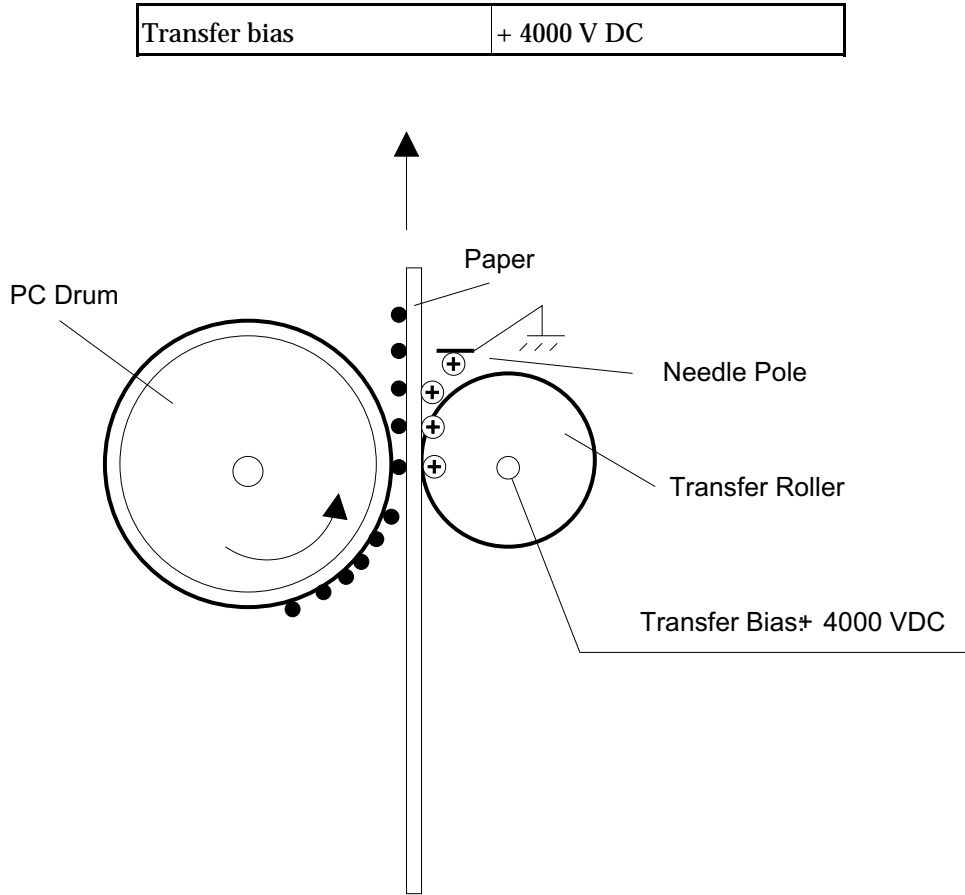


Figure 2-5. Transfer Process

2.1.1.5 Fusing Process

The fusing unit permanently fixes the toner image, transferred from the PC drum, onto the paper. The fusing system this printer uses is the heat roller fusing system. The toner on the paper is melted by the upper fusing roller, which is heated by the heater lamp, then the toner is fixed by pressure from the paper traveling through the upper and lower fusing rollers.

There is a thermostat and thermistor installed on the upper fusing roller. The thermistor detects the surface temperature of the upper fusing roller. The PWB-A board switches the heater lamp on or off, depending on the temperature detected. When the temperature is abnormally high, which is usually caused by a malfunction of the control board or the thermistor, the thermostat detects it and cuts off the current.

During warm up, the heater continues to heat up until it reaches 190°C (374 F). At printing, the heater is controlled to remain 180°C (356 F).

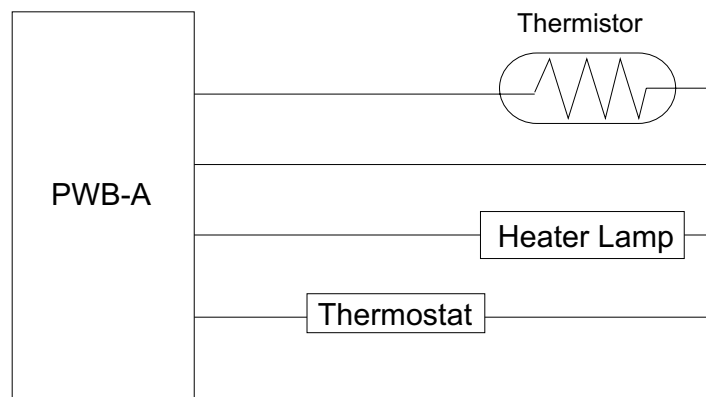
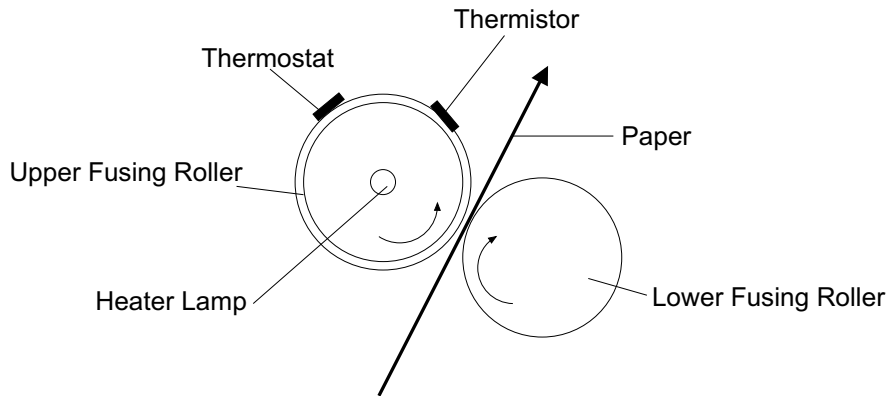


Figure 2-6. Fusing Process

2.1.1.6 Cleaning Process

Toner remaining on the PC drum after transfer process is scraped off with the cleaning blade, placed in close contact with the surface of the PC drum. The toner that has been scraped off is collected back into the toner collection box inside the Imaging cartridge.

2.1.2 Engine Mechanism Operation

This section describes the major units in the engine and their mechanisms.

2.1.2.1 Fusing Unit

- Upper fusing roller
A metallic sleeve roller that melts the toner on the paper. It is heated by a heater lamp built internally.
- Lower fusing roller
A silicon rubber roller that applies pressure to the paper for fusing the toner to the page.
- Heater lamp
A lamp built into the upper fusing roller. This is supplied AC power to heat the upper fusing roller.
- Thermistor
The thermistor, located next to the upper fusing roller, detects the roller's surface temperature. To control the roller's temperature, the control circuit alternately switches the heater lamp on and off based on the temperature the thermistor detects. (This process continues occurring as long as the thermostat does not detect overheating.)
- Thermostat
When the thermistor fails to control the temperature, the thermostat takes over the job. The thermostat has a series connection to the heater lamp's power source line, and when the temperature rises to the specific level, it opens the contact point. Then current is cut off as a consequence.

2.1.2.2 Paper Feeding Mechanism

□ Multi Purpose Tray

The drive for the tray is transmitted to the push-down cam by way of the main motor, paper takeup clutch, and paper takeup roller. The paper takeup roller and push-down cam rotate once when the the paper takeup solenoid is energized. While turning, the push-down cam pushes down the stack of paper on the paper lifting plate. Then the paper takeup roller picks up a sheet of paper. Friction between the paper separator and transport roller avoid multiple paper feeding.

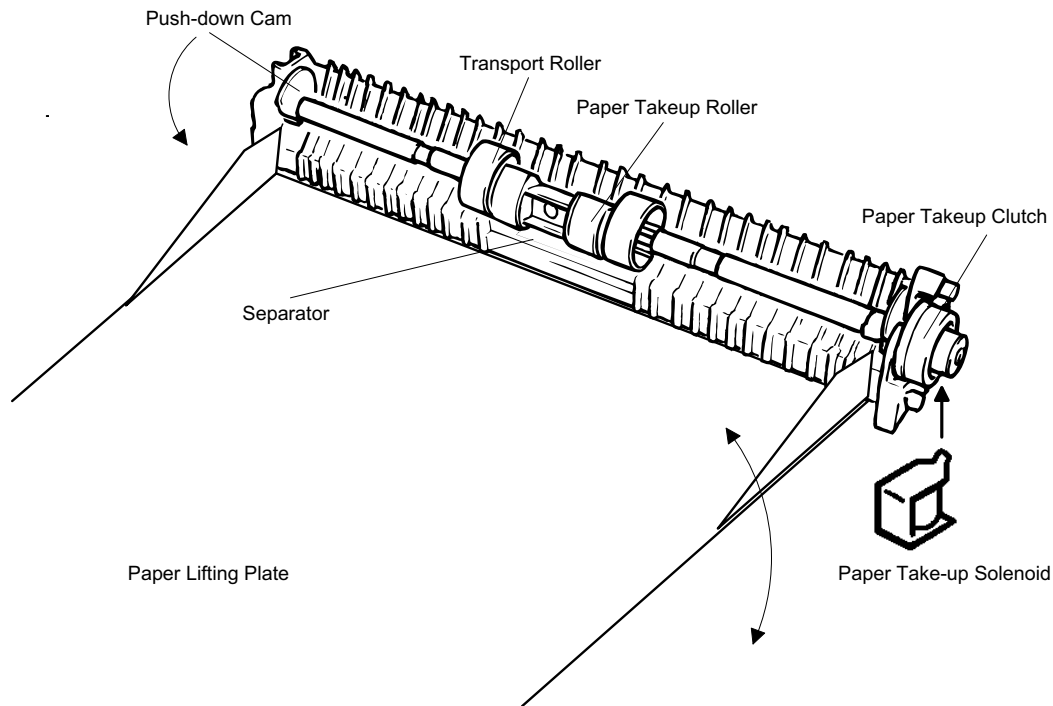


Figure 2-7. Paper Tray Feed Mechanism

❑ Lower Cassette Tray

The drive for the lower cassette tray is transmitted from the printer to the transport roller via the transmission gear, paper takeup clutch, and paper takeup roller. The lower paper cassette unit is controlled by the engine control board (PWB-A) through control board PWB-C. When the paper takeup solenoid (SL2) is energized, the paper takeup roller rotates once to pick up a sheet of paper, and the transport roller carries it to the PC drum. The separator avoids multiple paper feeding.

The paper size switch on control board (PWB-C) detects the size of the paper loaded in the tray. The paper near-empty sensor detects 2 conditions: whether the amount of paper remaining in the tray is 50 sheets or less or whether it is 250 sheets or less. The paper empty sensor is used to detect paper empty condition.

Table 2-2 shows combinations of the paper sizes and corresponding switches.

Table 2-2. Paper Size Switches

| Paper Size | SW1 | SW2 | SW3 | SW4 | Paper Size | SW1 | SW2 | SW3 | SW4 |
|------------------|-----|-----|-----|-----|-------------|-----|-----|-----|-----|
| A3 | ON | ON | OFF | ON | HLT | OFF | ON | ON | ON |
| A4* ¹ | OFF | ON | OFF | OFF | LGL | OFF | ON | OFF | ON |
| A5* ¹ | OFF | OFF | ON | ON | GLG | ON | OFF | ON | ON |
| B4* ¹ | ON | OFF | ON | OFF | GLT | ON | OFF | OFF | OFF |
| B5* ¹ | OFF | OFF | OFF | ON | B(11"*117") | ON | ON | ON | OFF |
| LT* ¹ | OFF | OFF | ON | OFF | No cassette | OFF | OFF | OFF | OFF |

*1: In landscape orientation

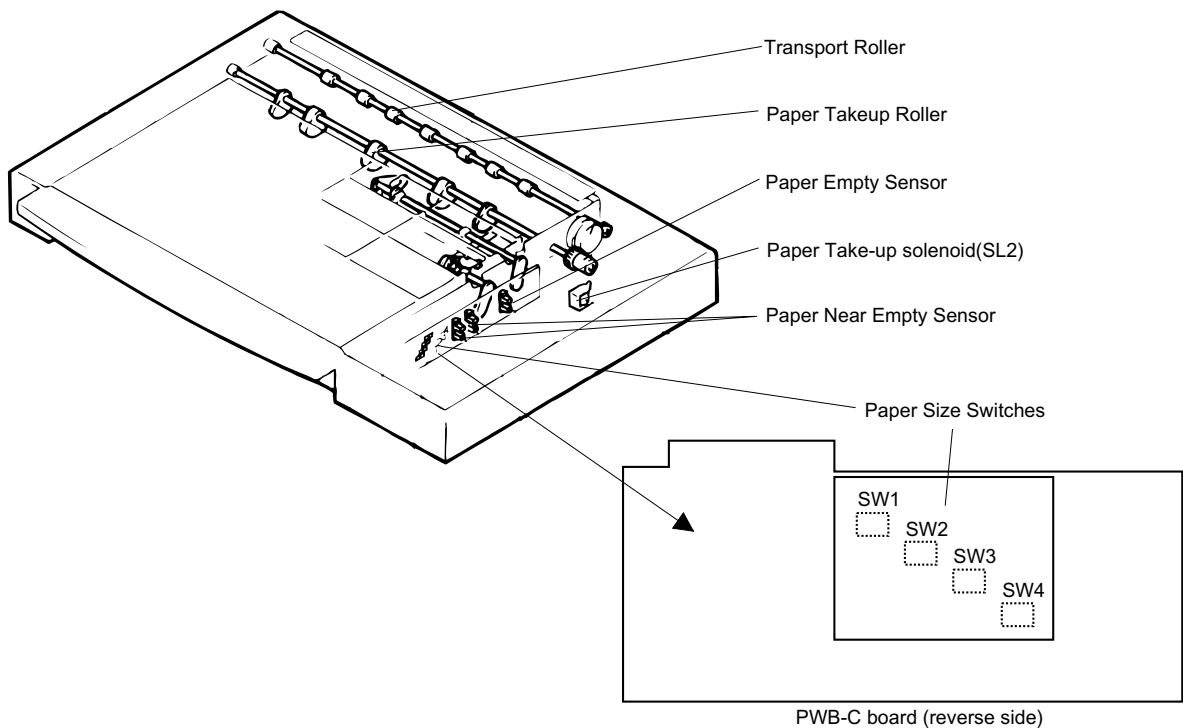


Figure 2-8. Paper Cassette Feed Mechanism

2.2 Controller Mechanism

2.2.1 Engine Control

This section gives information on the engine controller, power supply board, and the high-voltage supply board. The engine is controlled by the PWB-A board. Figure 2-9 shows an engine controller connection diagram.

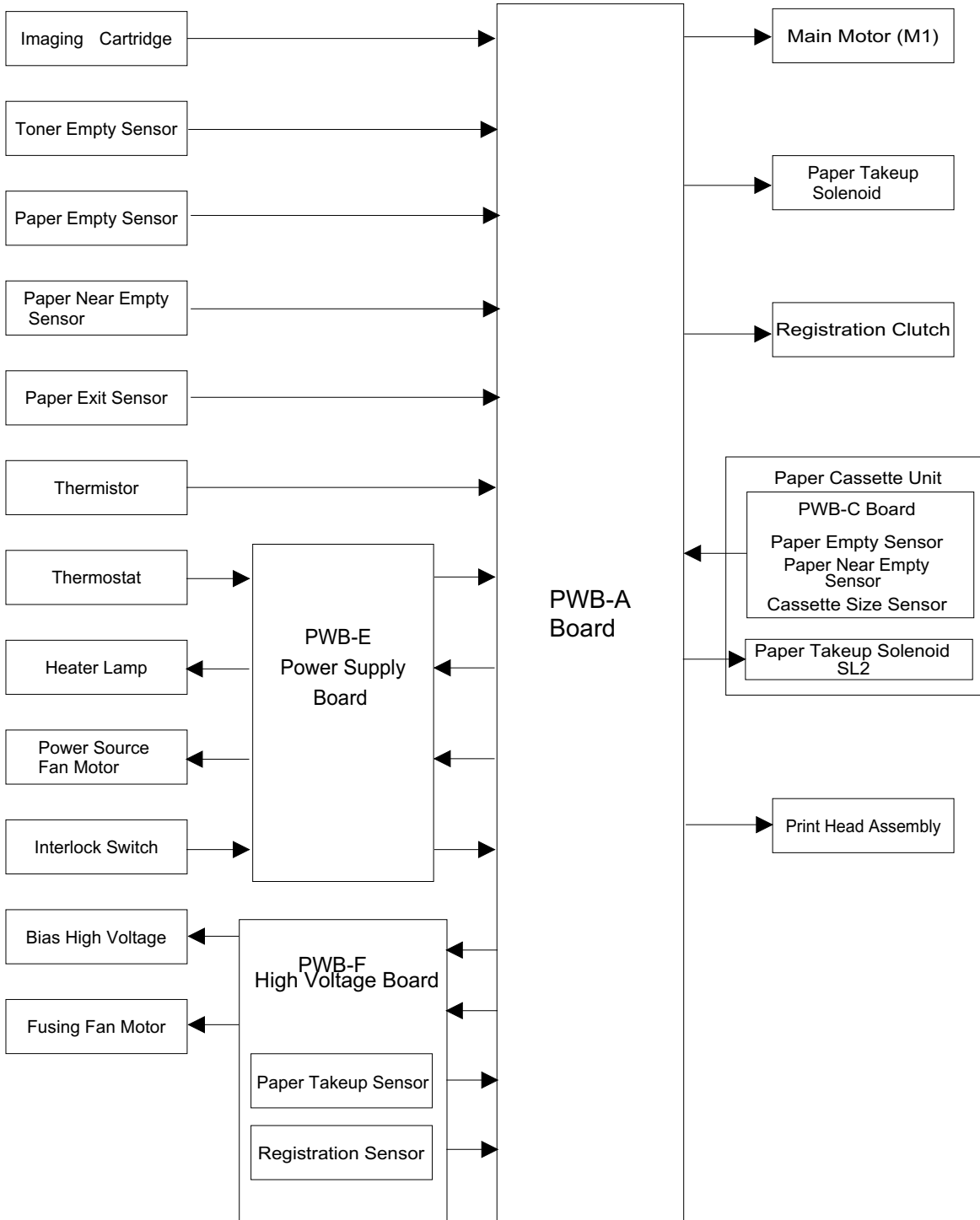


Figure 2-9. Engine Controller Diagram

2.2.1.1 Main Motor Mechanism and Control

The main motor, which is located in the driving unit, transmits drive force to the rollers in the printer. A main motor malfunction is detected if any of following conditions is detected:

1. The lock signal (CN5-1) goes OFF (LOW), and the OFF status continues for 1 second or more.
2. The lock signal (CN5-1) does not go OFF (LOW) within 1 second after the main motor goes ON (CN5-2=Low).

Figure 2-10 shows the main motor (M1) drive circuit.

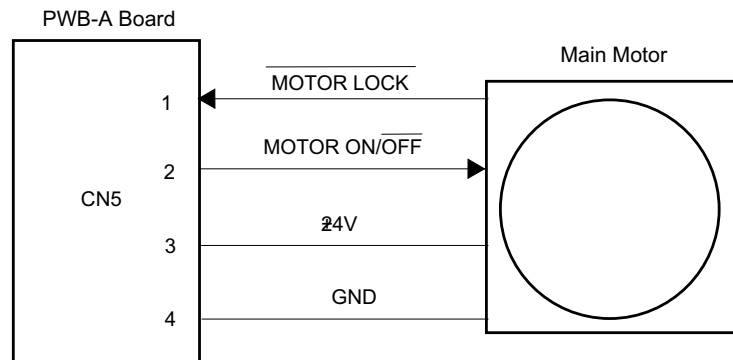


Figure 2-10. Main Motor Drive Circuit

2.2.1.2 Laser Unit Control

The laser unit, which consists of the laser diode unit and the polygon mirror, exposes the PC drum. The output level of laser is adjusted prior to the printing, and a laser error occurs if the adjustment fails.

If any of following conditions in the polygon motor is detected, the polygon motor is regarded as malfunctioning.

1. The polygon motor lock signal does not go ON within 10 seconds after the polygon motor goes ON.
2. The polygon motor lock signal goes ON after the polygon motor is energized, but it goes OFF again and does not come back ON within 1 second or more.
3. The SOS signal is not detected during printing.

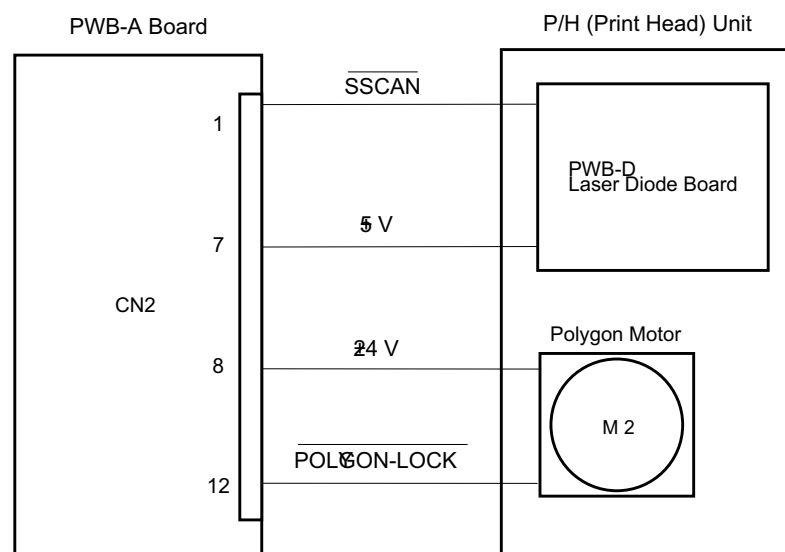


Figure 2-11. Laser Control

2.2.1.3 Fusing Control

The thermistor detects the surface temperature of the fusing roller and inputs the corresponding analog voltage to the PWB-A board. The heater lamp is turned ON and OFF by a signal output from PWB-A, based on the temperature detected by the thermistor. A fusing error occurs if any of following conditions is detected:

1. The thermistor voltage varies only in the range of 0.1 V within 12 to 30 seconds after the upper fusing roller starts warming up.
2. 120 seconds has passed after the upper fusing roller started warming up. But the temperature of the upper fusing roller is still under 190°C (374 F).
3. In standby, the upper fusing roller temperature drops under 140°C (284 F).
4. During printing, the upper fusing roller temperature drops under 150°C (302 F).
5. When the temperature is under control, the upper fusing roller temperature exceeds 240°C (482 F).

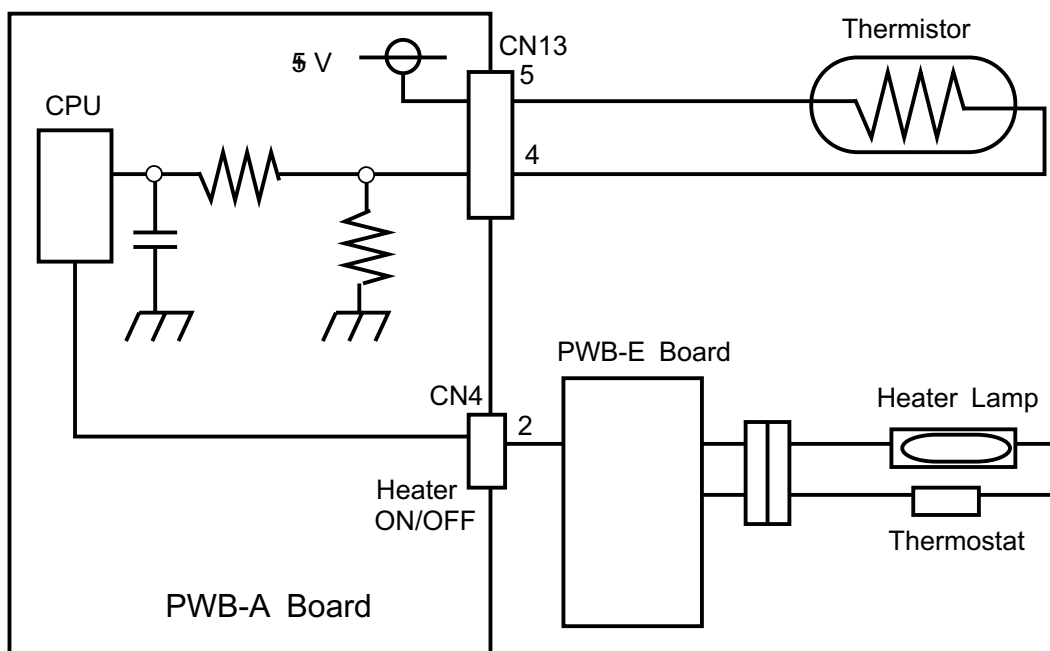


Figure 2-12. Fuser Control

2.2.1.4 Sensor Control

This section gives information on the sensors and how they are used to detect abnormal operations. Figure 2-13 shows the sensor layout.

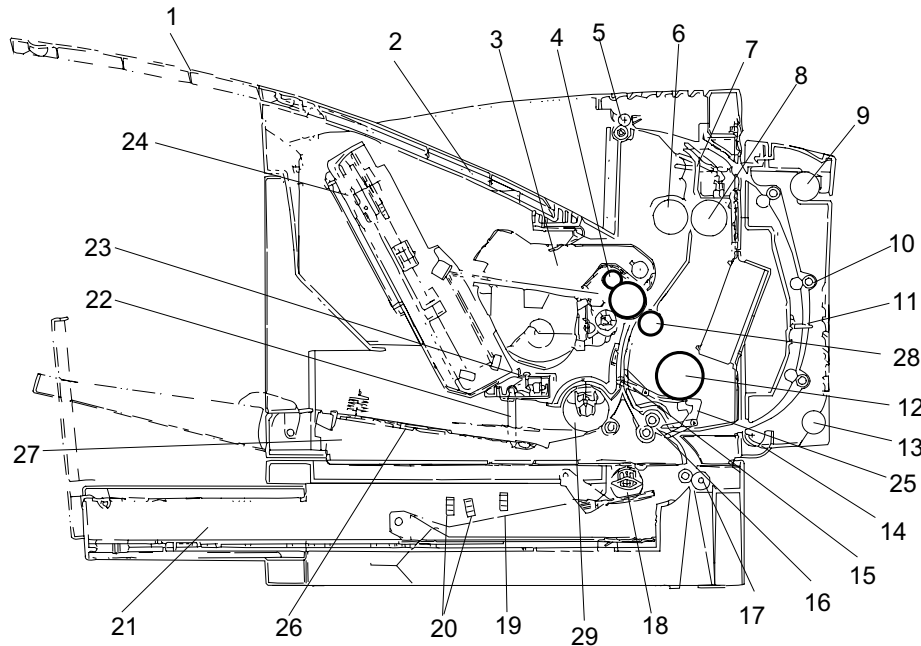


Figure 2-13. Sensor Locations

See Table 2-3 for sensor descriptions.

Table 2-3. Sensor Descriptions

| No. | Description | No. | Description |
|-----|------------------------------------|-----|--------------------------------|
| 1 | A3 Output Tray | 16 | Registration Roller |
| 2 | Paper Output Tray | 17 | Transport Roller |
| 3 | Imaging cartridge | 18 | Cassette Paper Takeup Roller |
| 4 | Charging Brush | 19 | Paper Empty Sensor (PE2) |
| 5 | Paper Exit Roller | 20 | Paper Near Empty Sensor (PE2) |
| 6 | Upper Fusing Roller | 21 | Lower Paper Cassette Unit |
| 7 | Paper Exit Sensor (PC3) | 22 | Paper Empty Sensor (PE1) |
| 8 | Lower Fusing Roller | 22 | Paper Near Empty Sensor (PEN1) |
| 9 | Switchback Motor (Optional) | 23 | Toner Empty Sensor (TE 1) |
| 10 | Duplex Transport Roller (Optional) | 24 | Laser Unit |
| 11 | Duplex Paper Sensor (Optional) | 25 | Registration Sensor (PCR 1) |
| 12 | Main Motor | 26 | Paper Lifting Plate |
| 13 | Transport Motor (Optional) | 27 | MP Tray |
| 14 | Duplex Cover Switch | 28 | Transfer Roller |
| 15 | Paper Takeup Sensor | 29 | Paper Takeup Roller |

A paper jam is detected if any of following conditions occurs:

- ❑ During feeding from the MP tray, the paper takeup sensor (PC1) fails to go OFF within approximately 1.6 seconds after the paper takeup roller has started rotating.
- ❑ During feeding from the paper cassette, the registration sensor (PCR1) does not go OFF within approximately 1.4 seconds* after the paper takeup roller has started rotating.
* 2.5 seconds for the optional paper cassette
- ❑ During feeding from the paper cassette, the paper takeup sensor (PC1) fails to go OFF within approximately 1.0 seconds after the leading edge of the page has reached the registration sensor.
- ❑ The paper takeup sensor (PC1) does not go ON while power is on or when the upper and the duplex unit covers are closed.
- ❑ The paper takeup sensor (PC1) does not go ON within approximately 2.8 seconds after the leading edge of the page has reached the paper takeup sensor (PC1) .
- ❑ The paper exit sensor (PC3) fails to go OFF within approximately 2.3 seconds after the leading edge of the page has reached the paper takeup sensor (PC1).
- ❑ The paper exit sensor (PC3) does not come ON within approximately 2.3 seconds after the ending edge has passed the paper takeup sensor (PC1).
- ❑ The paper exit sensor (PC3) does not come ON while power is on or when or the upper and duplex unit covers are closed.
- ❑ The duplex paper sensor (PC4) does not go OFF within approximately 2.7 seconds after the switch-back motor for the duplex unit has gone ON.
- ❑ The registration sensor (PCR1) fails to go OFF within approximately 1.1 seconds after the leading edge of the page has reached the duplex paper sensor (PC4).
- ❑ During duplex printing, the paper takeup sensor (PC1) does not go OFF within approximately 1.0 seconds after the leading edge of the page has reached the registration sensor (PCR1).
- ❑ The duplex paper sensor (PC4) does not come ON while power is on or when the upper and duplex unit covers are closed.
- ❑ The registration sensor (PCR1) does not come ON while power is on or when the upper and duplex unit covers are closed.
- ❑ The registration sensor (PCR1) fails to come ON when the upper unit cover is closed.
- ❑ The registration sensor (PCR1) fails to come ON when the duplex unit cover is closed.

2.2.2 Video Control Operation

2.2.2.1 C207 MAIN Board Operation

The video controller receives print data and converts it into corresponding image signal before transmitting them to the engine controller. Figure 2-14 shows a block diagram of C207 MAIN board. The C207 MAIN board contains a wide variety of ICs such as the CPU, memory, ASIC, and driver.

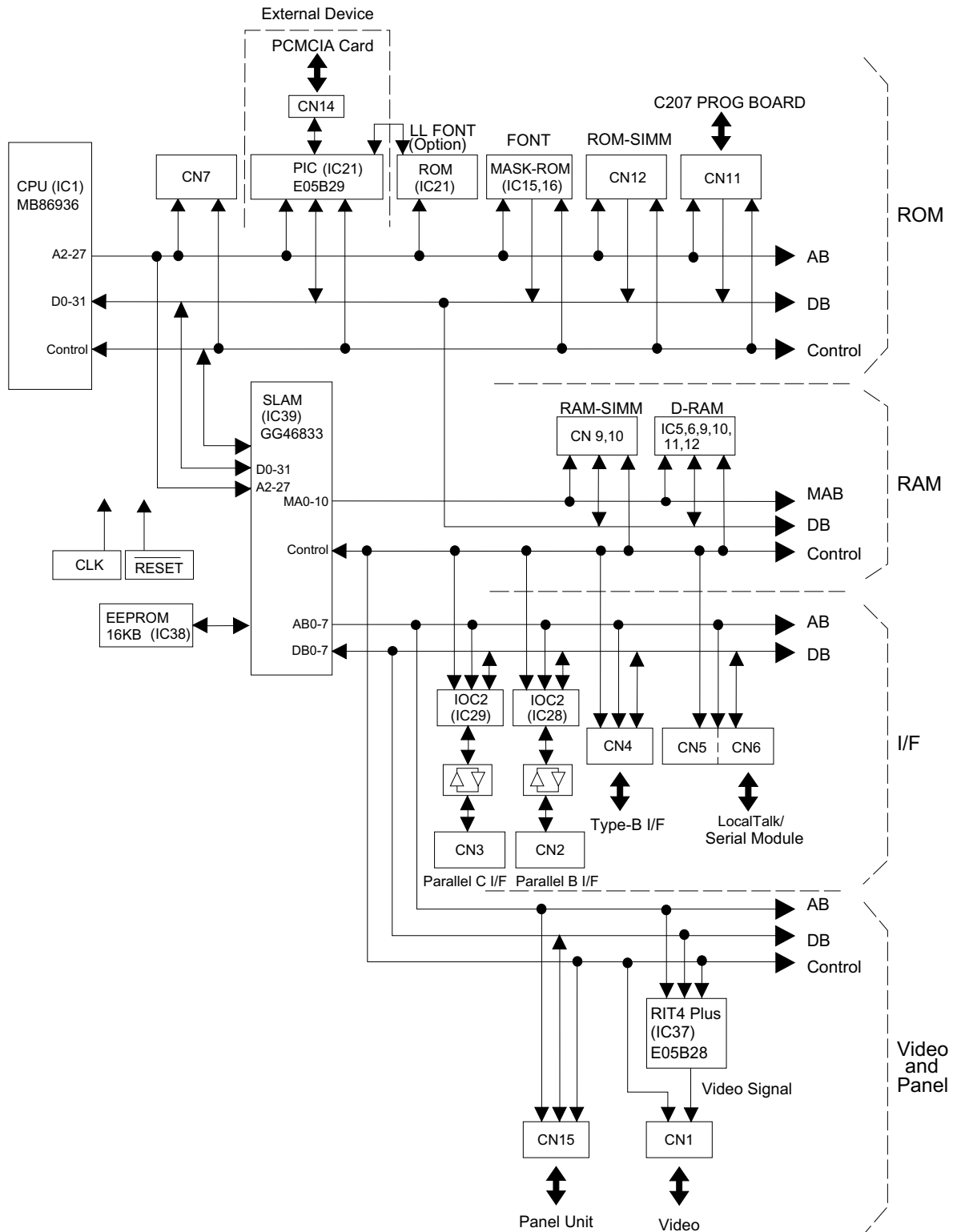


Figure 2-14. C207 MAIN Board Flow Chart

Table 2-1 lists the main components of the C207 MAIN board and their functions.

Table 2-1. Functions of Main Board Components

| Component | Location | Function |
|--------------------------|---|---|
| MB86936 RISC CPU | IC1 | The CPU, which operates at 47.6 MHz manages the video controller operation. |
| SLAM GG46833 | IC39 | This LSI contains the following functions: <ul style="list-style-type: none"> ■ DRAM management (refresh control, $\overline{\text{RAS}}/\overline{\text{CAS}}$ control) ■ Wait controller ■ Interrupt controller |
| RIT4 Plus E05B28 ASIC | IC37 | This ASIC is a video controller for BiRIT and EMGT. |
| IOC2 E05B27 ASIC | IC28, IC29 | This ASIC contains the following functions: <ul style="list-style-type: none"> ■ IC28: Parallel B interface ■ IC29: Parallel C interface |
| Two 8 M-bit FONT ROMs | IC15, IC16 | These ROMs are font ROMs. |
| Option 8M-Bit ROM | IC21 | This ROM is local language ROM (font) option. |
| EEPROM | IC38 | This 16K-bit EEPROM stores the followings: <ul style="list-style-type: none"> ■ Mode type ■ Printer page counter value ■ Toner life counter value ■ SelecType setting |
| DRAM | IC9 - 12 * ¹ IC5, IC 6 * ² | These DRAMs are used as the working area of the elements such as the CPU, input buffer, and image buffer. |
| PIC E05B29 ASIC | IC20 | This ASIC contains following functions: <ul style="list-style-type: none"> ■ PCMCIA controller ■ LocalLanguage controller |
| C207 PROG Board | - | 4M-bit Flash ROMs are mounted on the C207 PROG board to store the control programs. |

*1: IC9, 10, 11 ,12 are used in Europe.

*2: IC5 and IC 6 are used in the United States.

2.2.2.2 Video Controller Operation Principles

Print data and commands transmitted from the host computer through the network, parallel, or optional I/F are read and then stored in the input buffer in DRAM. If the buffer size (which varies depending on the SelecType setting) is increased, the host computer is released sooner.

Data and commands are then stored in the video RAM (the image buffer) memory area after being processed in the video controller CPU, where the data is converted into print bitmap data (image data). The size of the video RAM depends on the current size of the RAM memory and the SelecType setting.

An error or warning for memory size occurs under the following conditions, and such problems usually can be solved by changing buffer size or increasing RAM memory:

- Bitmap data from the CPU is too complicated for the size of video RAM.
- When data is complicated, the CPU cannot process it faster than it is transmitted to the engine controller board.

Image data stored in video RAM is transmitted to the ASIC, where the BiRITech and PGI functions manipulate the data. The data is then passed on to the engine controller as video data. The engine controller processes the video data transmitted from the video controller. Engine mechanisms driven by the PWB-A board then perform printing.

When an error occurs, the CPU in the engine controller detects it and sends status information to the video controller, where the information is processed, and the corresponding error message and the code are displayed on the Control panel.

CHAPTER 3 DISASSEMBLY AND ASSEMBLY

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3.1 GENERAL INFORMATION

This chapter describes the disassembly/assembly procedures to be used for replacing the main assemblies of the EPL-N2000.

3.1.1 Precautions for Disassembly/Assembly

Follow the precautions below when disassembling/assembling the printer.



- Disconnect the power cord before disassembling/assembling the printer.*
- Be sure to handle the fusing unit carefully, because the unit remains hot for a while after the printer stops printing.*
- If it is necessary to plug in the power cord and operate the printer after disassembling it, take the following precautions:*
 - 1.Keep your hands and clothing well away from operating or rotating parts (such as rollers, fan motors, etc.)*
 - 2.Never touch electric terminals or high-voltage components (such as the charger and the high voltage unit).*
- Be sure to close the top cover when operating the printer. This printer uses an invisible laser beam which could cause damage or loss of eyesight. Therefore never energize the interlock switch to connect current with the top cover open.*



- Handle frame edges with care since this printer has a considerable amount of metal materials.*
- Do not disassemble the Imaging cartridge.*
- If the Imaging cartridge is removed from the printer, do not place it in direct sunlight.*
- Do not disassemble the printhead assembly.*
- To prevent damage to ICs from static electricity, do not touch the ICs on the circuit board or the terminals of peripheral electrical components with your hands.*
- Use only the recommended tools to ensure safe and efficient maintenance work. Inappropriate tools may damage the machine.*
- Never open the top cover until the main motor stops completely.*
- When transporting the printer, remove the Imaging cartridge.*
- When transporting the printer a long distance, pack it using the original packing material.*

3.1.2 Tools

Use the tools listed in Table 3-1 for disassembling/assembling the printer.

Table 3-1. Tools

| Name | Part No. |
|---------------------------|------------|
| Philips screwdriver No. 2 | B743800200 |
| Regular screwdriver | B743000100 |
| Tweezers | B641000100 |
| Soldering iron | B740200100 |
| Round-nose pliers | B740400100 |

3.1.3 Specifications for Screws

In the following sections, abbreviations are used for small parts such as screws and washers. Table 3-2 lists these abbreviations. Table 3-3 lists screw and washer types.



Be sure to use the correct type of screw since many different types of screws are used in this printer.

Table 3-2. Screw Abbreviations

| Abbreviation | Part Name |
|--------------|---|
| CCS | Cross-recessed Cup head S-tight |
| CCB | Cross-recessed Cup head B-tight |
| CB(S-P1) | Cross-recessed Bind head with Spring lock washer and 1 Plain washer |
| CBS | Cross-recessed Bind head S-tight |
| CPS | Cross-recessed Pan head S-tight |

Table 3-3. Screw and Washer Types

| Screw type | Appearance |
|------------|------------|
| CCS | |
| CCB | |
| CB(S-P1) | |
| CBS | |
| CPS | |

3.1.4 Service Checks after Repair

Check the repaired unit using the list in Table 3-4 before returning the printer to the user to ensure that repair and shipping are accomplished appropriately.

Table 3-4. Checks after Repair

| Item | Location | Checkpoint | Check |
|-------------|---------------|---|-------|
| Operation | Control panel | Do all LEDs, LCD, and buttons function normally? | |
| | Heater lamp | Does the heater lamp turn on normally? | |
| | Status sheet | Is the status sheet printed normally? | |
| | Data print | Does data print in all modes? | |
| ROM version | --- | Is it the latest version? | |
| Cleaning | --- | Are toner and dust removed from the paper path? Is the lens on the optical unit clean? Is the paper takeup roller clean? Are the fusing rollers clean? Is the outer surface of the printer clean? | |
| Packing | --- | Is the Imaging cartridge removed from the printer? Is the unit packed securely? Are accessories packed also? | |

3.1.5 Servicing Operations

This section describes the special service modes and combinations of switches used to enter each mode. The modes listed in this section are only to be operated by qualified service people for repair. Therefore the specifications for these modes were eliminated from the user's guide.

EEPROM Initialization

The EEPROM, mounted on the controller board, is used to save settings selected through the SelecType mode and the printer status information such as the page counter.

This function resets all user settings and printer status information to the factory default settings.

■ Switches to use:

Turn on the printer while holding down the On Line, Continue, and Menu switches.



Use of this function must be limited to the the conditions listed below, since it also clears page counter information.

- EEPROM is replaced.***
- The C207 MAIN Board, along with EEPROM, is replaced.***
- When refurbishing the EEPROM.***

Page Counter Clearance

The page counter information, which can be checked through the SelecType, is stored on the EEPROM. The page counter clear function resets the page counter to "0".

■ Switches to use:

Turn on the printer while holding down the On Line, Item, and Menu switches.

Flash IC Card Clear

When the optional flash IC card is used, the saved information in the card is erased with this mode. It's only available when the card is inserted in card slot A.

■ Switches to use:

Turn on the printer while holding down the SelecType, Item, Value, and Enter switches. "Formatting Card" appears, which is indicated on the LCD.

"Write Error Card" is indicated in place of "Formatting Card" under the following conditions.

The IC card inserted is not acceptable.

The card is write protected.

Flash ROM Update

This function is used to update a Flash ROM.

■ Switches to use:

1. Turn On the printer while holding down the On Line, Menu, Item, and Value switches.

2. Press the Item, Value, and Enter switches while "Program Device" is indicated.

The parallel interface (B connector) starts sending data when "Please Send Data" is indicated.

Use the 2 other modes listed below when you need information to analyzing the cause of a persistent error related to a firmware malfunction.

- ❑ **Resetting of the CPU after a service call error has occurred.**
When a "Exxx" or "C2000" error has occurred, it can be cleared using this function without turning the printer Off and back On.
 - **Switches to use:**
Press the SelecType, Menu, Item, Value, and Enter switches. This combination is effective only when the printer is in an error status.

- ❑ **Indication of service call error details**
When a "Exxx" or "C2000" error has occurred, detailed information on the error can be indicated by using this function.
 - **Switches to use:**
Press the Continue, SelecType, and Menu switches at one time.
The LCD panel displays detailed information on the error.
If any of the switches is then pressed, error type is displayed.

3.2 DISASSEMBLY AND ASSEMBLY

This section describes and illustrates the procedures for disassembling and assembling the components of the EPL-N2000. The assembly procedures are not described, except for special notes where necessary, because assembly can be accomplished by performing disassembly in reverse order.

3.2.1 Outer Covers Removal

This section describes how to remove the left cover, right cover, front cover, top cover, rear cover, right front cover, right rear cover and the control panel. See the figure below which shows the location of the covers and screws.

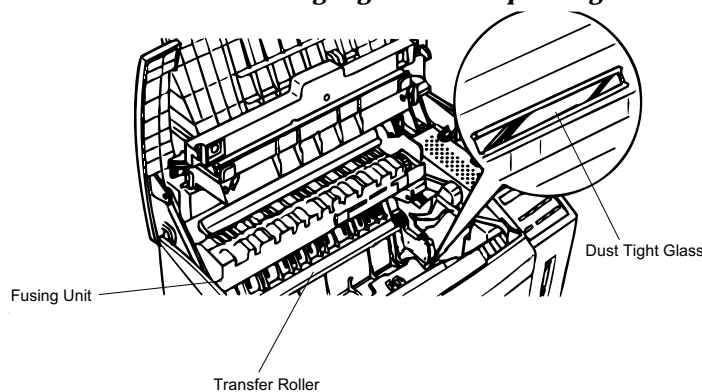
3.2.1.1 Opening the Top Cover

1. Push the blue release lever and open the top cover.



Never touch the following parts when opening the top cover.

- ❑ **Fusing unit:** It remains hot for a while after the printer stops printing.
- ❑ **Transfer Roller:** Contact with the roller causes printing deterioration.
- ❑ **Dust tight glass:** Contact with the dust tight glass causes printing deterioration.



3.2.1.2 Left Cover Removal

1. Loosen 2 CCS screws (3 X 8) from the top and rear parts of the left cover.
2. Remove the left cover.

3.2.1.3 Right Cover Removal

1. Loosen 3 CCS screws (3 X 8) from the upper part of the right cover.
2. Remove the right cover.

3.2.1.4 Top Cover Removal

1. Remove a screw from the cover.
2. Remove a shoulder screw from the top cover.
3. Remove a CCB screw (3 X 8) from the top cover.
4. Remove the top cover.

3.2.1.5 Control Panel Removal

1. Remove the FFC from the C207 MAIN Board.
2. Remove 2 CCS screws (3 X 8) from the right and upper side of the panel.
3. Remove the Control Panel.

3.2.1.6 Right Front Cover Removal

1. Loosen 1 CCS screw (3 X 8) from the upper part of the right front cover.
2. Remove the Right Front Cover.

3.2.1.7 Front Cover Removal

1. Loosen 2 CCS screws (3 X 6) from the upper part of the front cover.
2. Remove 2 CCS screws (3 X 8) from the front side of the front cover.
3. Remove 2 CCS screws (3 X 6) from the inside of the front paper tray.
4. Pull out the Front Cover and remove.

3.2.1.8 Rear Cover Removal

1. Remove 2 CCS screws (3 X 8) from the upper part of the rear cover.
2. Release 6 hooks securing the rear cover. (Refer to Figure 3-2.)
3. Remove the rear cover.

Disassembly Note

Release the 6 hooks with care so as they won't break.

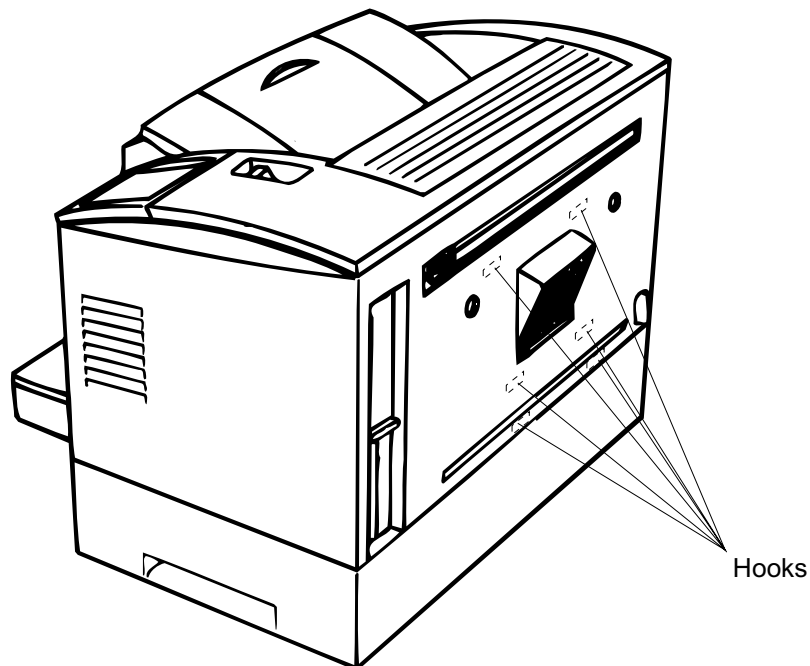


Figure 3-1. Rear Cover Hook Locations

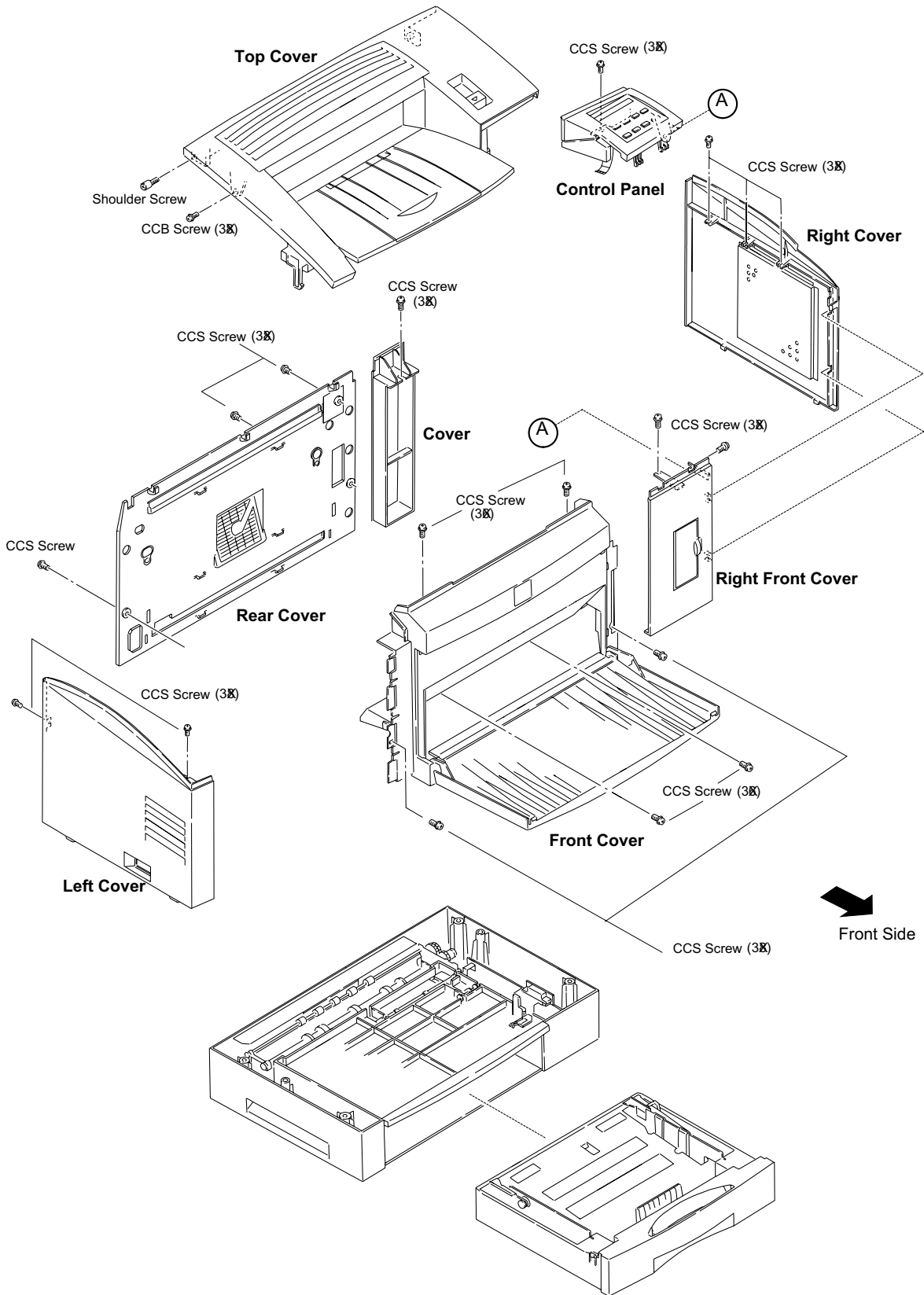


Figure 3-2. Outer Cover Removal

3.2.2 Fusing Unit Removal

1. Remove 2 CCS screws (3 X 8) securing the fusing unit through the rear cover and rear panel.
2. Disconnect the connectors from the fusing unit. (2 from the right , 1 from the left)
3. Remove 2 CCS screws (3 X 8) Securing the fusing unit.
4. Remove the fusing unit.

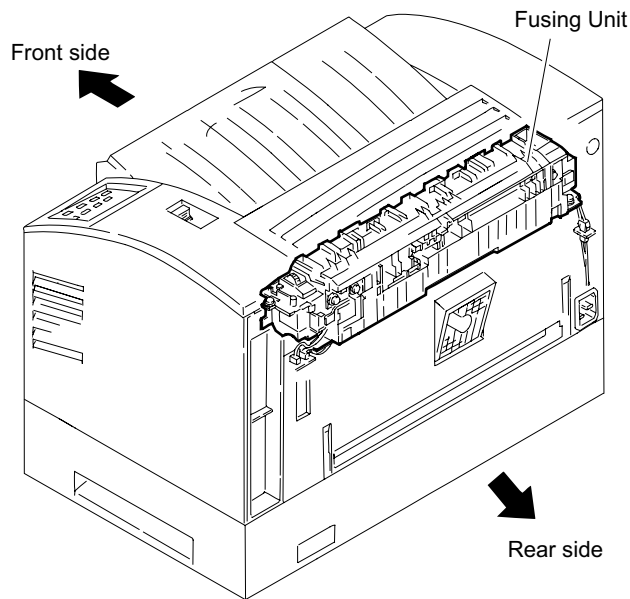


Figure 3-3. Fusing Unit Location

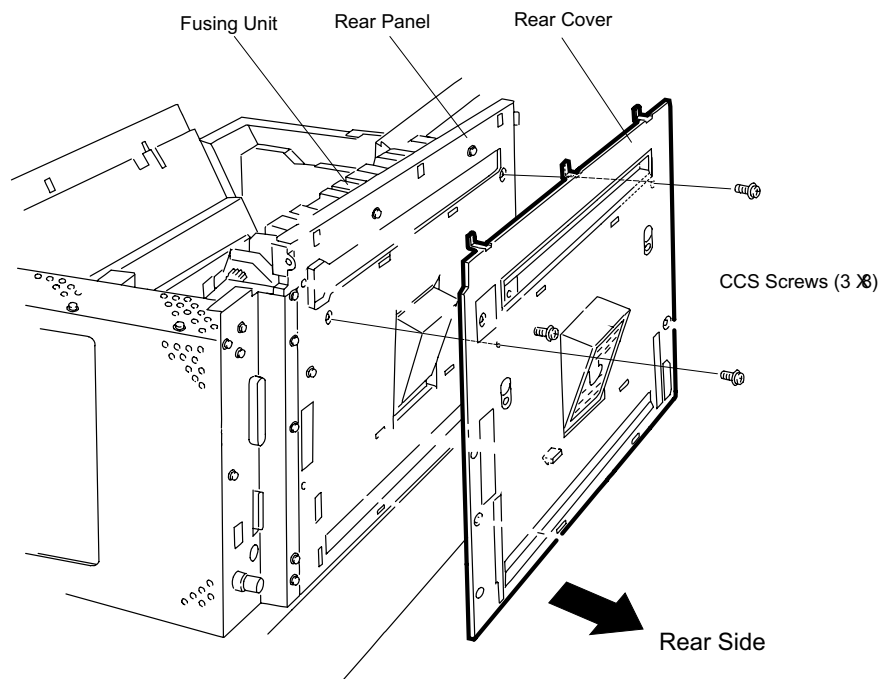


Figure 3-4. Fusing Unit Removal (1)

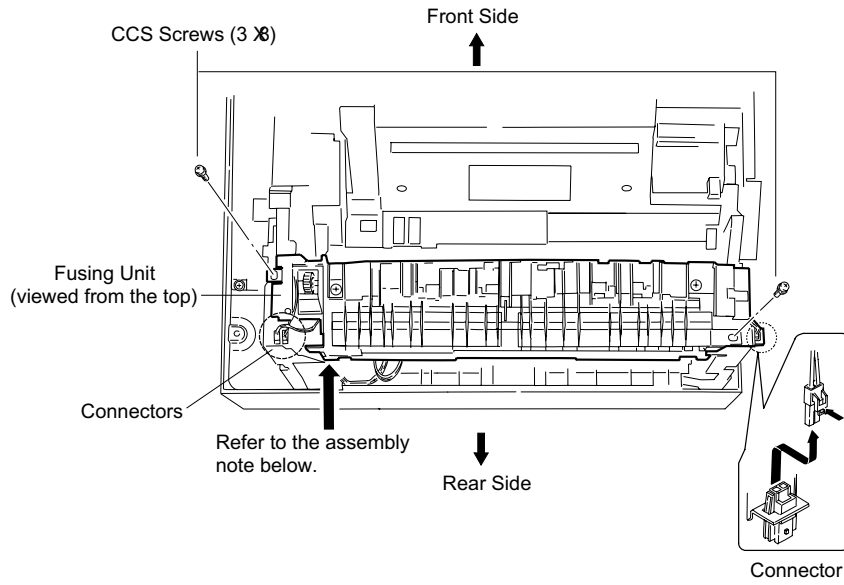
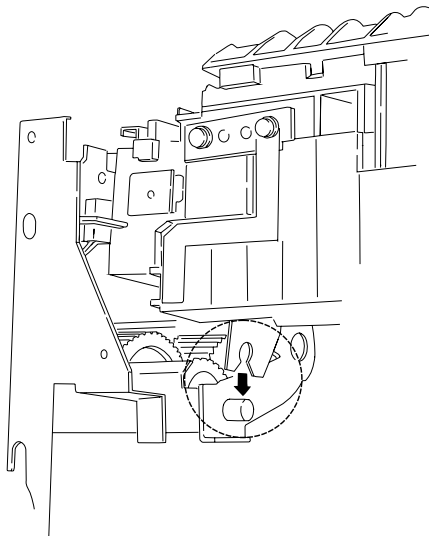


Figure 3-5. Fusing Unit Removal (2)

Assembling Note

When reassembling the fusing unit, adjust the notch of the fusing unit with the shaft of the gear.



3.2.3 PWB-E Board (Power Supply Board) Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Disconnect 5 connectors (NC 1 to CN5) on the electrical board.
3. Remove 6 CCS screws (3X 6) from the PWB-E Board.
4. Remove the PWB-E Board.

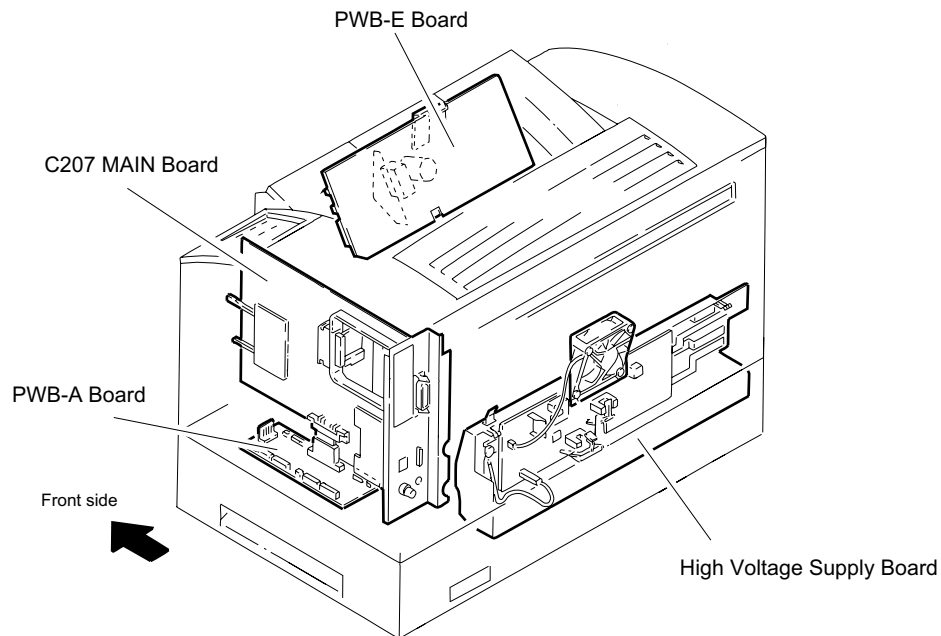


Figure 3-6. Unit Location (1)

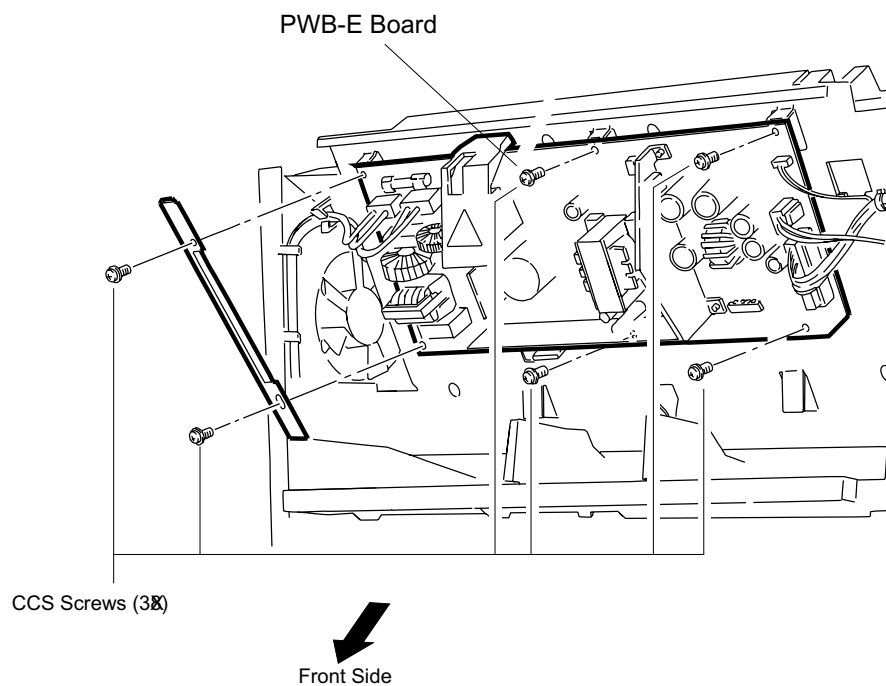


Figure 3-7. PWB-E Board Removal

3.2.4 Main Controller Board Removal

Refer to Figure 3-6.

3.2.4.1 Shield Frame Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove 15 CBS screws (3X6) securing the shield frame.
3. Remove the shield frame.

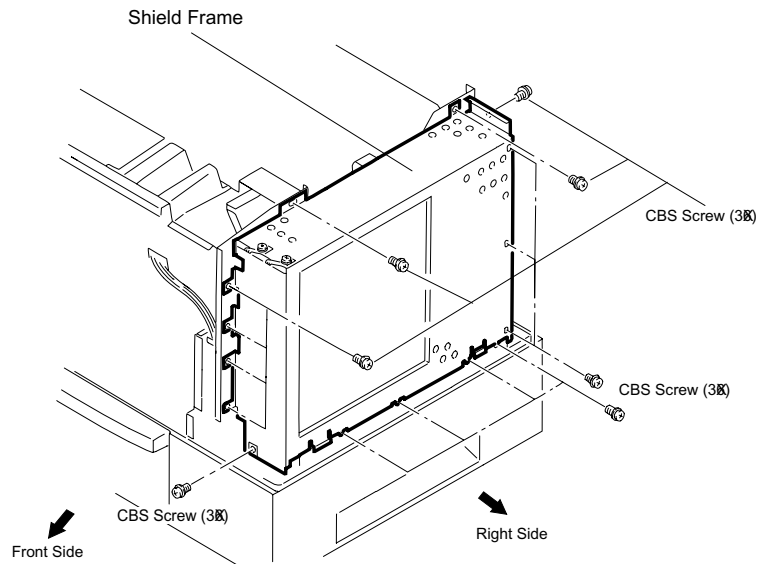


Figure 3-8. Shield Frame Removal

3.2.4.2 C207 MAIN Board Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the shield frame. (Refer to Section 3.2.4.1.)
3. Remove 4 CCS screws (3X6) securing the connector panel of the C207 MAIN Board.
4. Remove 6 CBS screws (3X8) securing the MAIN Board.
5. Remove the C207 MAIN Board.

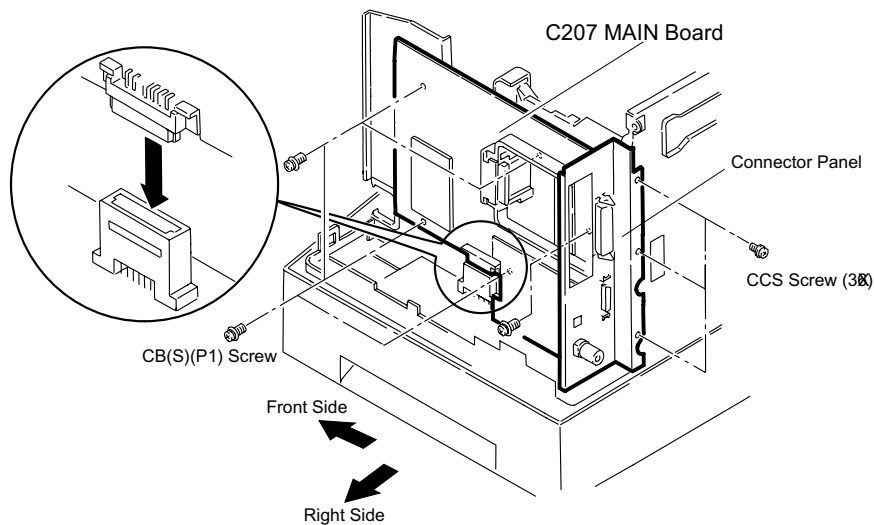
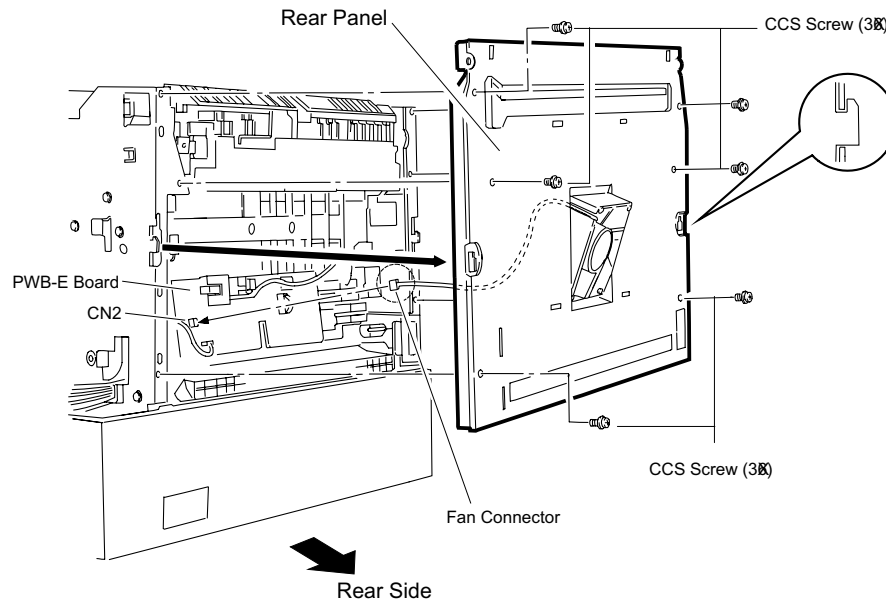


Figure 3-9. C207 MAIN Board Removal

3.2.5 Rear Panel Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the C207 MAIN Board. (Refer to Section 3.2.4 .)
3. Remove the 6 CCS screws (3X6) securing the rear panel.
4. Lift up the Rear Panel to release 2 hooks, then remove the panel. Be sure to disconnect the fan connector from the High Voltage Supply (PWB-F) Board Unit.



3-10. Rear Panel Removal

3.2.6 Transfer Unit Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing unit. (Refer to Section 3.2.2.)
3. Remove the C207 MAIN Board. (Refer to Section 3.2.4.)
4. Remove the rear panel. (Refer to Section 3.2.5.)
5. Remove 1 CCB screw (3X8) securing the transfer unit.
6. Remove the Transfer Unit by pushing aside the left frame in the direction indicated by the arrow.

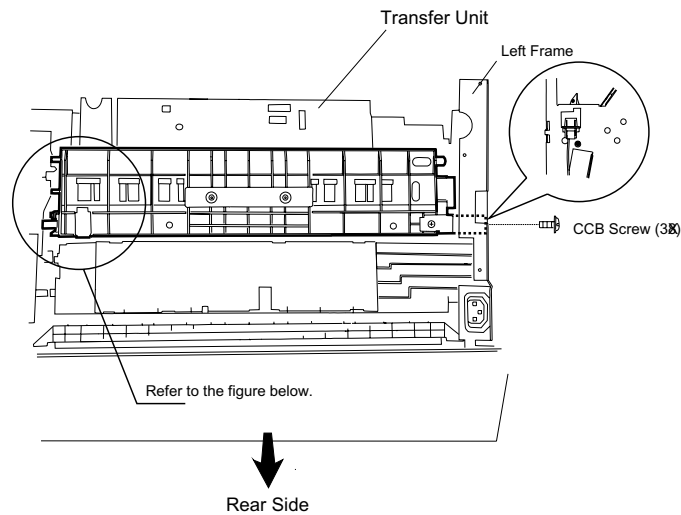


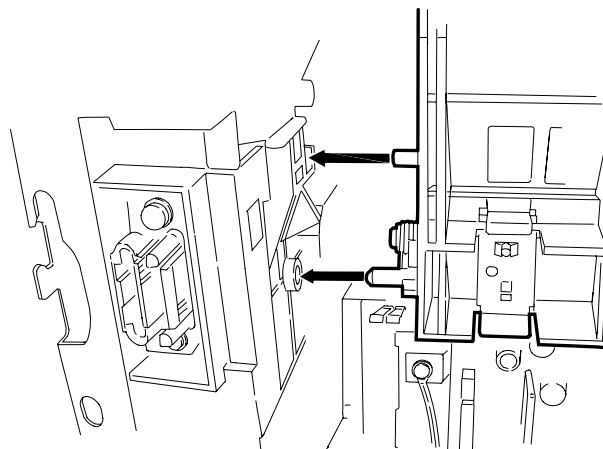
Figure 3-11. Transfer Unit Removal



Don't touch the surface of the Transfer Roller with your bare hands.

Assembly Note

When assembling the transfer Unit, ensure that the pins on the Transfer Unit fit into the holes in the Drive Unit.



3.2.7 High Voltage Supply (PWB-F) Board Unit Removal

Refer to Figure 3-6.

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Remove the C207 MAIN Board. (Refer to Section 3.2.4.)
4. Remove the Rear Panel. (Refer to Section 3.2.5.)
5. Remove the Transfer Unit. (Refer to Section 3.2.6.)
6. Disconnect the CN1 of the High Voltage Supply Board Unit.
7. Remove the CCS screw (3X8) securing the High Voltage Supply Board Unit.
8. Remove the High Voltage Supply Board Unit.

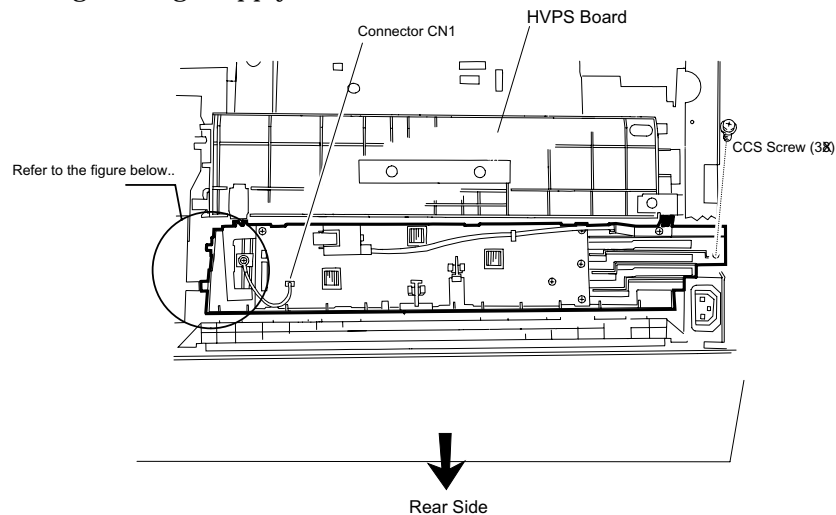


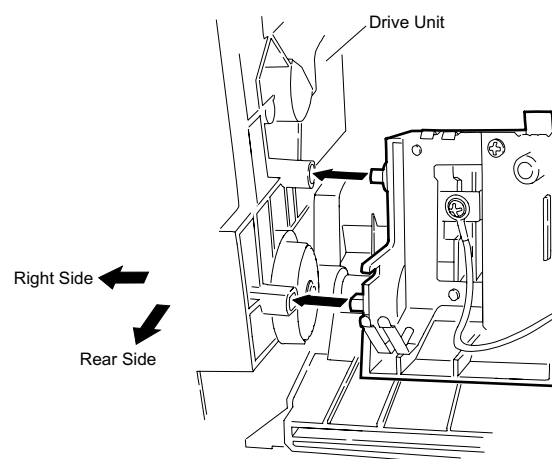
Figure 3-12. High Voltage Supply Board Unit Removal



Never change the variable resistor volume (VR 1 to 6) on the High Voltage Supply Board.

Assembly Note

When assembling the High Voltage Supply Board, ensure that the pins on the High Voltage Supply Board fit into the holes in the Drive Unit.



3.2.8 Printhead Unit Removal

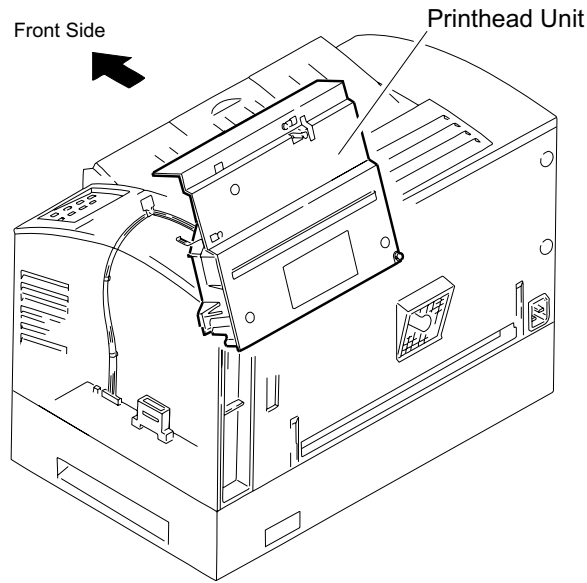


Figure 3-13. Printhead Unit Location

3.2.8.1 Harness Cover Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove 2 CCS screws (3X8) securing the harness cover.

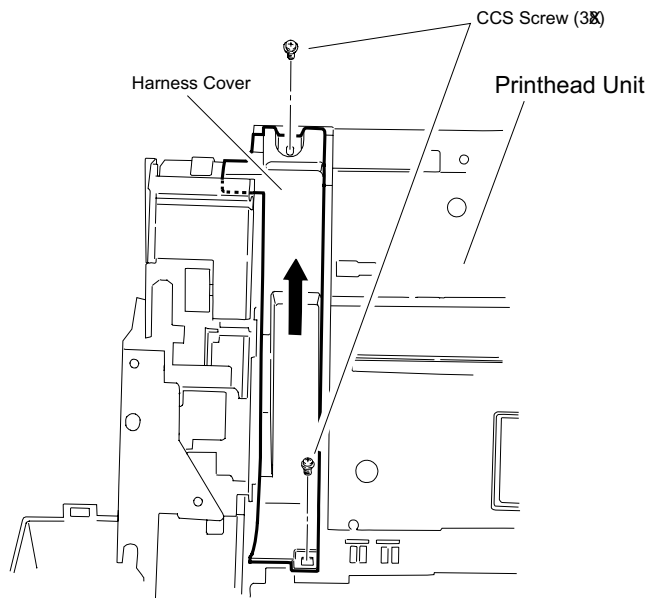


Figure 3-14. Harness Cover Removal

3.2.8.2 Printhead Unit Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the harness cover. (Refer to Section 3.2.8.1.)
3. Disconnect the connector (CN2) on the PWB-A Board.
4. Remove 2 CB(S-P1) screws (3X20) and a CCS screw (3X12) securing the Printhead.
5. Remove the Printhead.

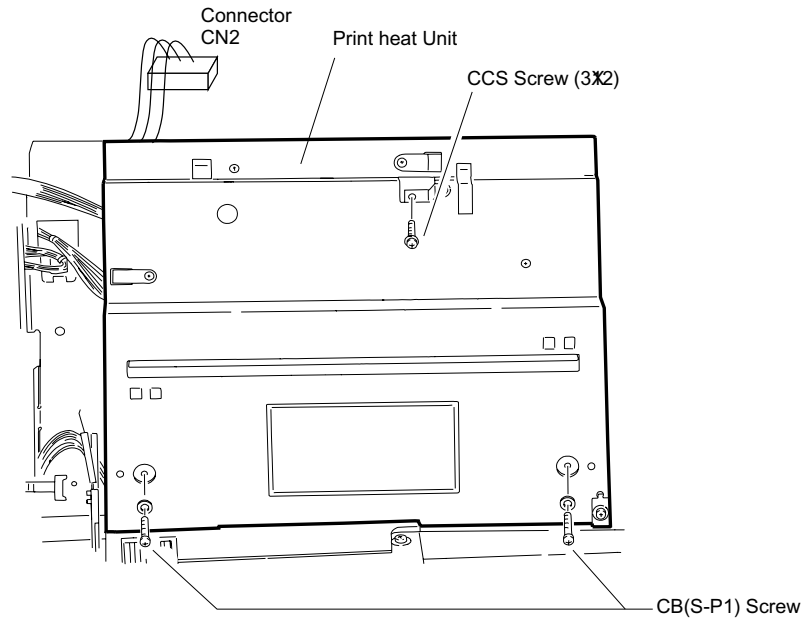


Figure 3-15. Printhead Unit Removal

3.2.9 Paper Empty Sensor Assembly Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the harness cover. (Refer to Section 3.2.8.1.)
3. Disconnect the connectors (CN3, CN6, CN9) on the PWB-A Board.
4. Remove 3 CCS screws (3X6) securing the Paper Empty Sensor Assembly.
5. Remove the Paper Empty Sensor Assembly.

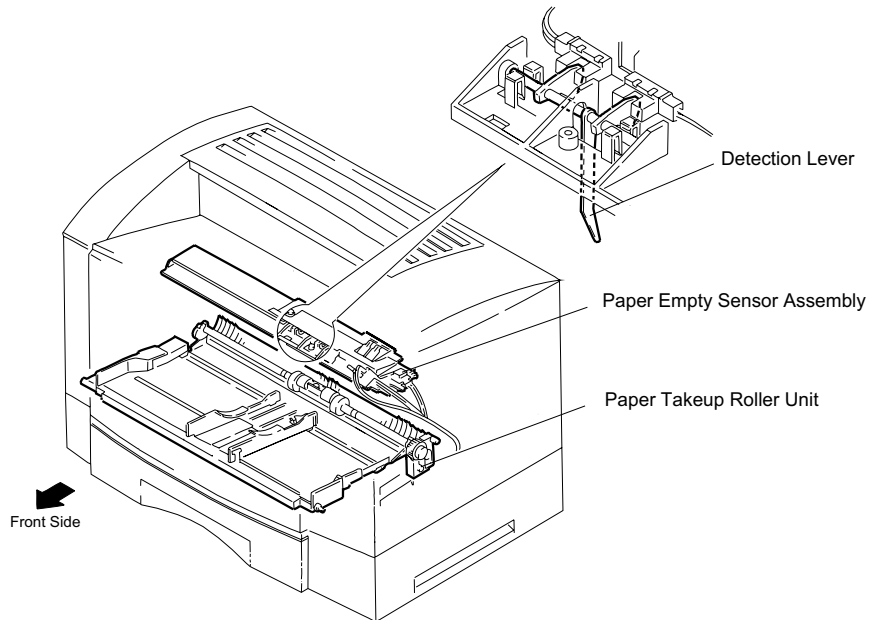


Figure 3-16. Unit Location (2)

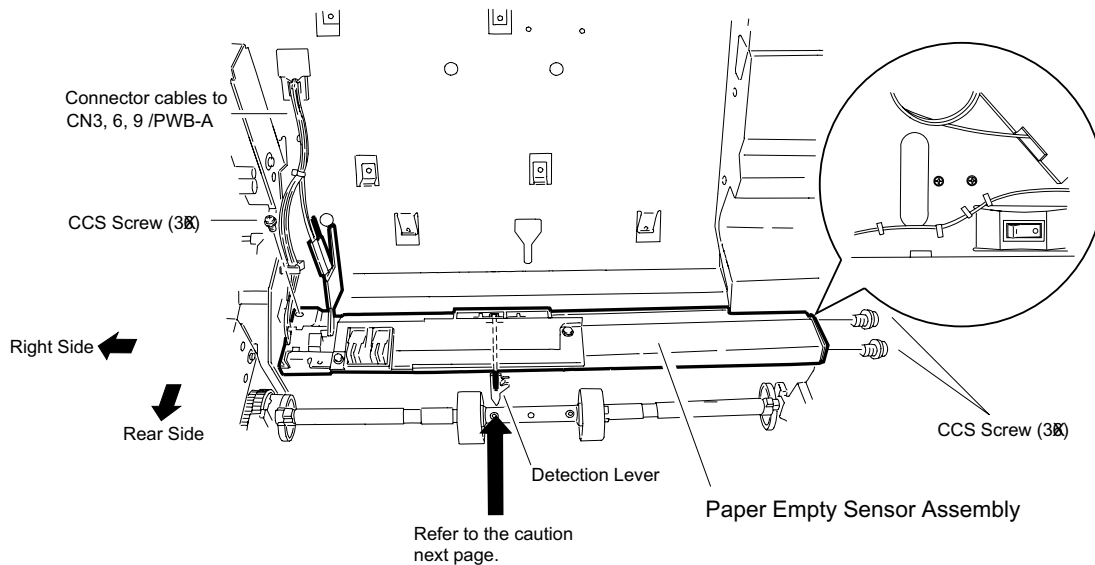
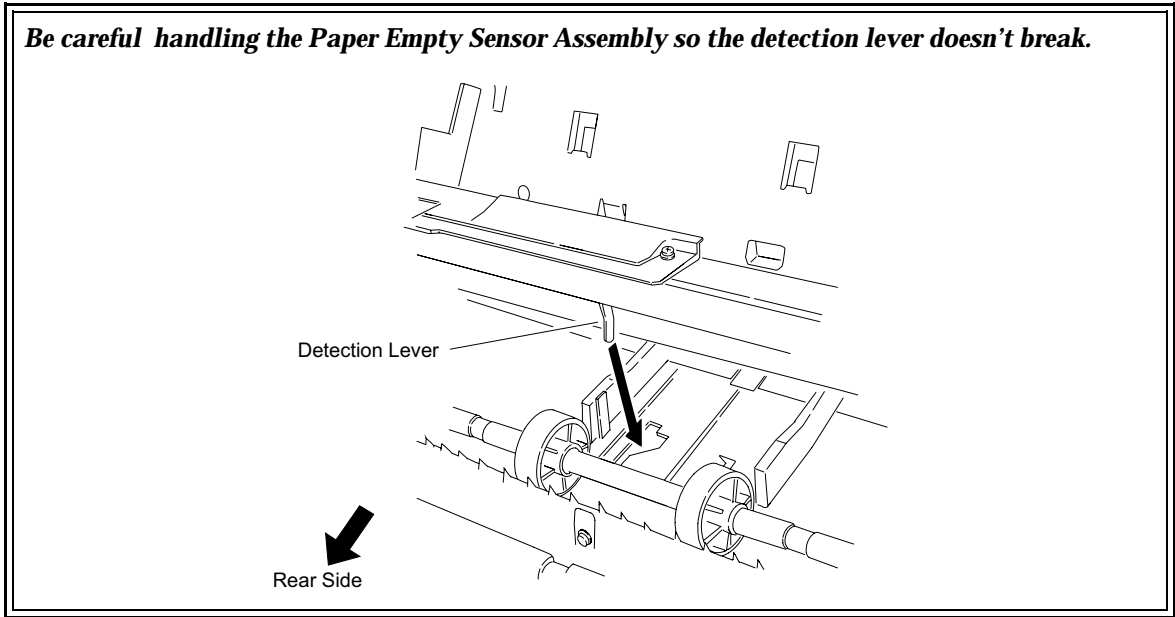


Figure 3-17. Paper Empty Sensor Assembly Removal

 **CAUTION**

Be careful handling the Paper Empty Sensor Assembly so the detection lever doesn't break.



3.2.10 Paper Takeup Roller Assembly Removal

Refer to Figure 3-16.

1. Open the top cover.
2. Remove the Fusing Unit.
3. Release the hooks on both edges of the the Transport guide, then remove the Transport guide.
4. Remove 1 CB(S-P1) screw (3X8) securing the Paper Takeup Roller Assembly.
5. Remove the Paper Takeup Roller Assembly.

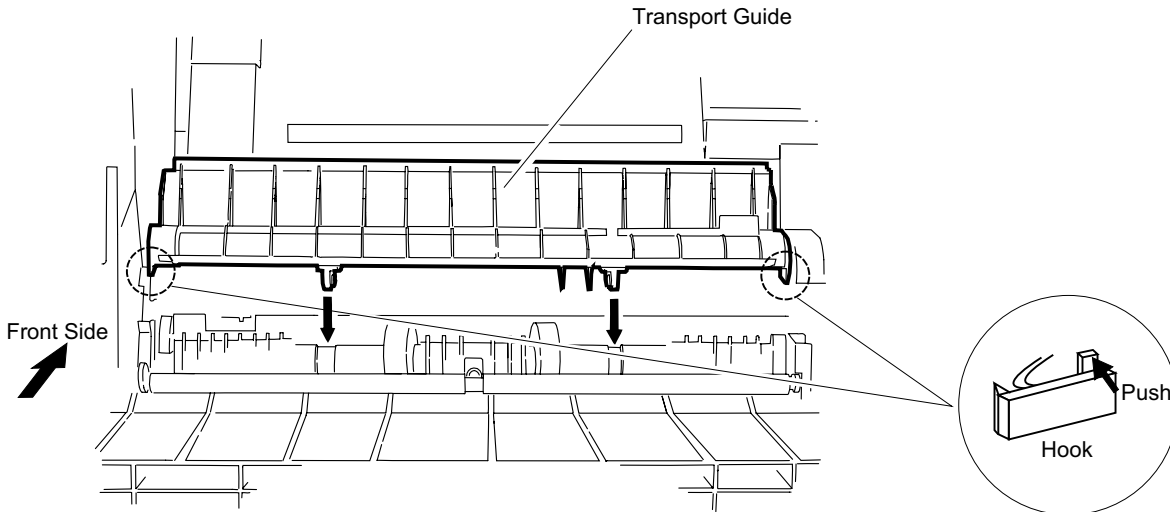


Figure 3-18. Transport Guide Removal

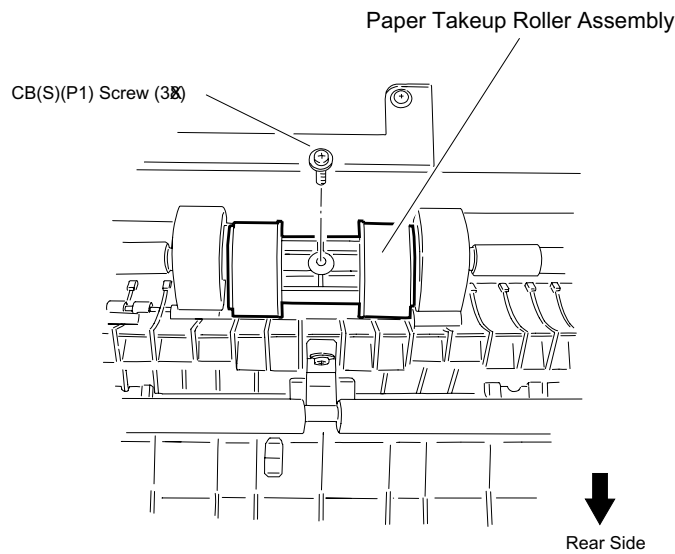


Figure 3-19. Paper Takeup Roller Assembly Removal

3.2.11 Paper Takeup Roller Unit Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Remove the Transfer Unit. (Refer to Section 3.2.6.)
4. Remove the High Voltage Supply Board. (Refer to Section 3.2.7.)
5. Remove the Paper Empty Sensor Assembly (Refer to Section 3.2.9.)
6. Remove 1 CCB screw (3X8) securing the Paper Lifting Plate.
7. Remove 1 CCS screw (3X8) securing the Paper Takeup Roller Unit
8. Remove the Paper Lifting Plate.
9. Remove the Paper Takeup Roller Unit.

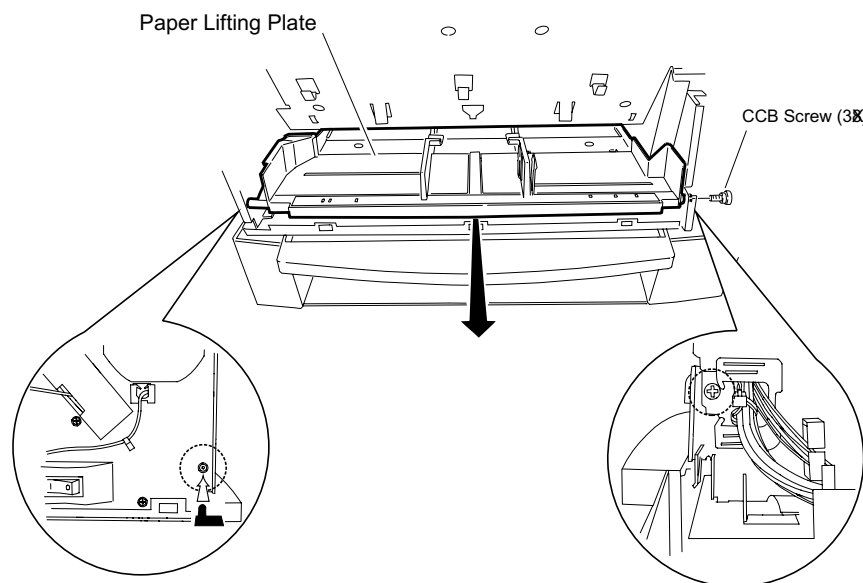
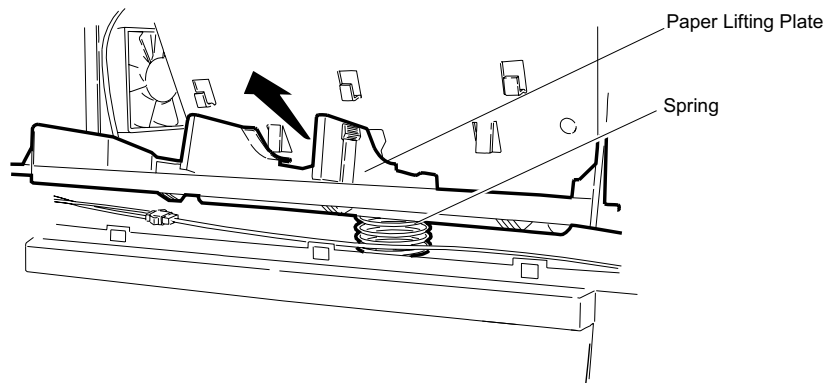


Figure 3-20. Paper Lifting Plate Removal



There is a spring under the paper lifting plate. Make sure that the spring won't catch the connector when taking out the paper lifting plate.



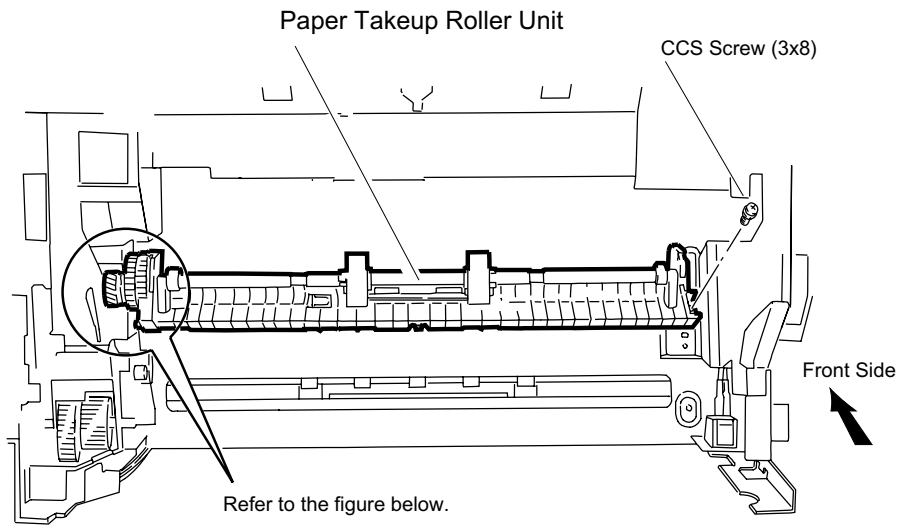
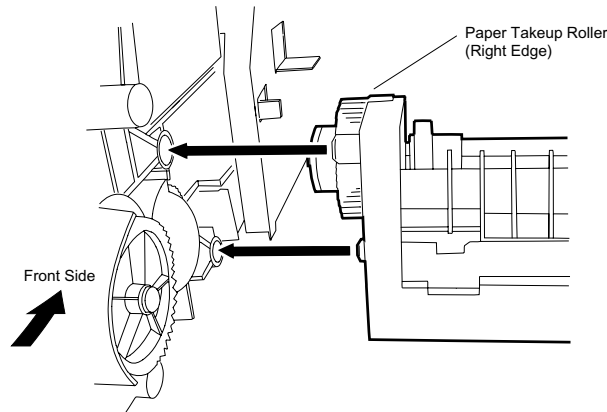


Figure 3-21. Paper Takeup Roller Removal

Assembly Note

When reinstalling the Paper Takeup Roller Unit, fit the pins on the Paper Takeup Roller into the corresponding holes in the Drive Unit.



CAUTION

When installing or reinstalling the Paper Takeup Roller Unit, make sure that it won't interfere with the contact points of the Imaging cartridge.

3.2.12 Registration Roller Assembly

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Remove the Transfer Unit. (Refer to Section 3.2.6.)
4. Remove the High Voltage Supply Board. (Refer to Section 3.2.7.)
5. Remove the Paper Empty Sensor Assembly. (Refer to Section 3.2.9.)
6. Remove the Paper Takeup Roller Unit. (Refer to Section 3.2.11.)
7. Remove 2 CCS screws (3X8) securing Registration Roller Assembly.
8. Remove the Registration Roller Assembly.

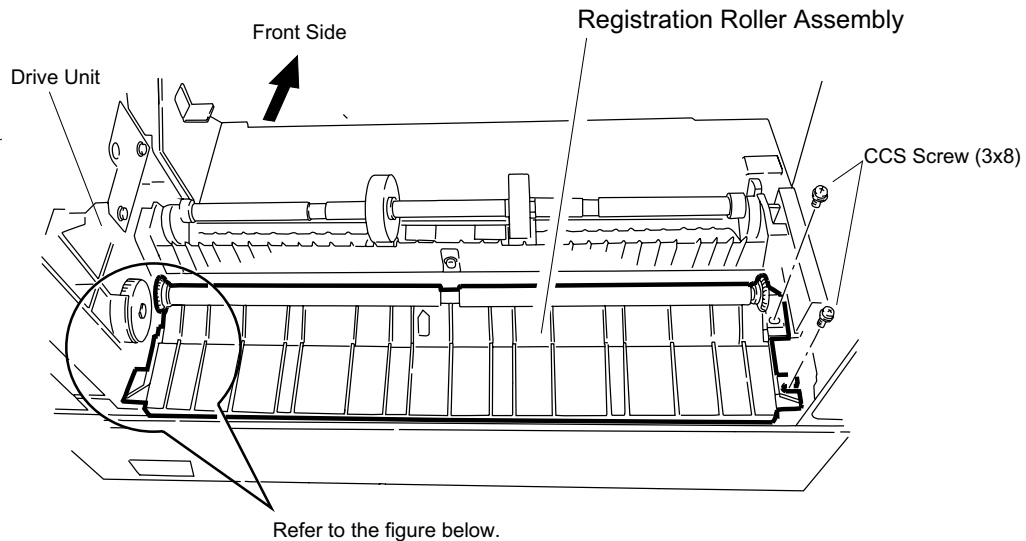
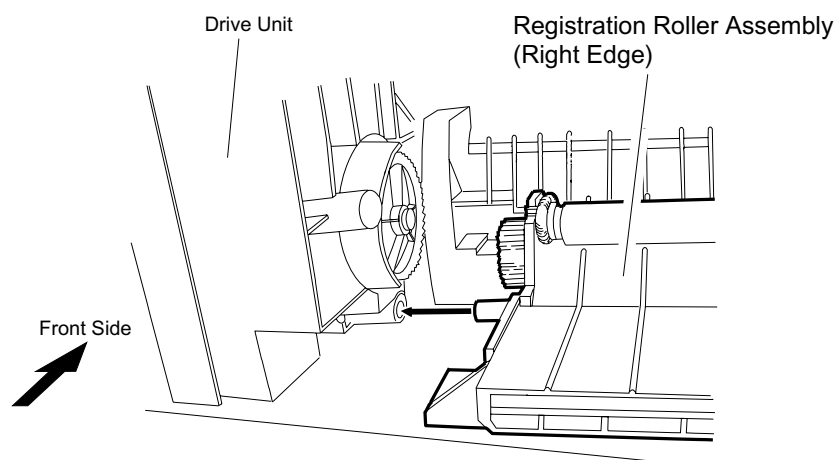


Figure 3-22. Registration Roller Assembly Removal

Assembly Note

When reinstalling the Registration Roller Assembly, fit the pins on the Registration Roller Assembly into the corresponding holes in the Drive Unit.



3.2.13 PWB-A Board Unit Removal

Refer to Figure 3-6.

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Remove the C207 MAIN Board. (Refer to Section 3.2.4.)
4. Remove 2 CCS screws (3X6) securing the PWB-A Board Unit.
5. Remove the PWB-A Board Unit.

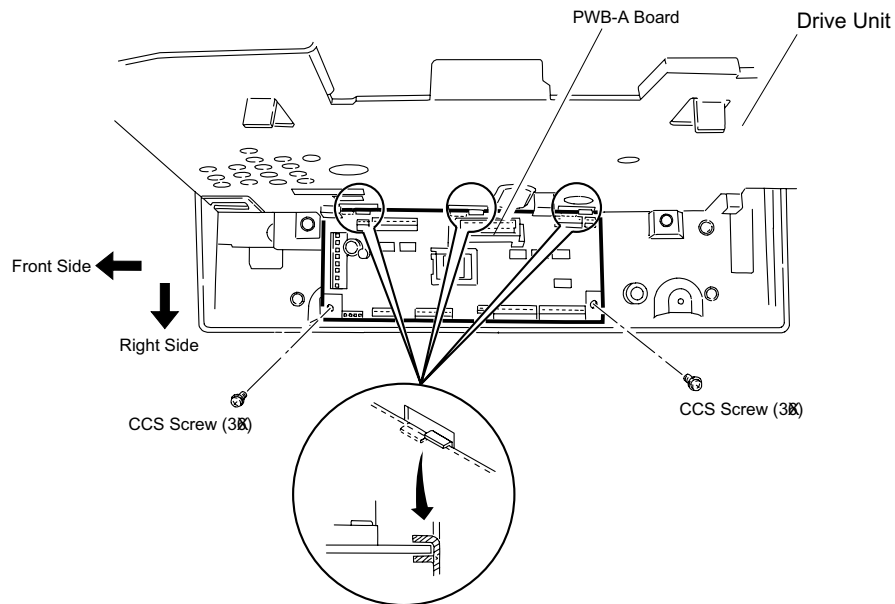


Figure 3-23. PWB-A Board Unit Removal

Assembly Note

When assembling the PWB-A Board Unit, be sure to adjust it to the slots in the Drive Unit.

3.2.14 Drive Unit Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Remove the C207 MAIN Board. (Refer to Section 3.2.4.)
4. Remove the Rear Panel. (Refer to Section 3.2.5.)
5. Remove the Transfer Unit. (Refer to Section 3.2.6.)
6. Remove the High Voltage Supply Board. (Refer to Section 3.2.7.)
7. Remove the Printhead Unit (Refer to Section 3.2.8.)
8. Remove the Paper Empty Sensor Assembly (Refer to Section 3.2.9.)
9. Remove the Paper Takeup Roller Unit. (Refer to Section 3.2.11.)
10. Remove the Registration Roller Assembly. (Refer to Section 3.2.12.)
11. Remove the PWB-A Board. (Refer to Section 3.2.13.)
12. Remove 5 CCS screws (3X6) securing the Drive Unit.
13. Remove the Drive Unit.

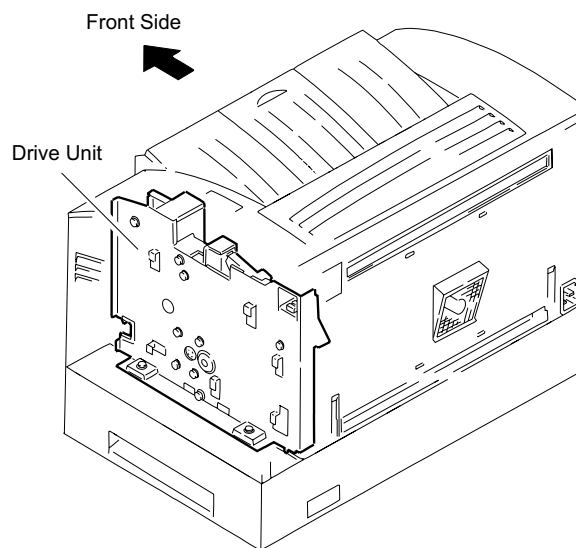


Figure 3-24. Drive Unit Location

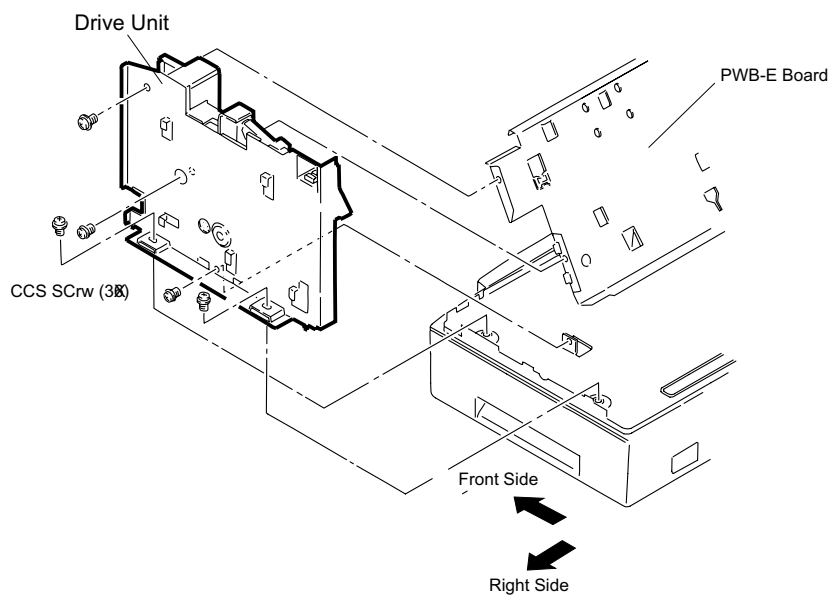


Figure 3-25. Drive Unit Removal

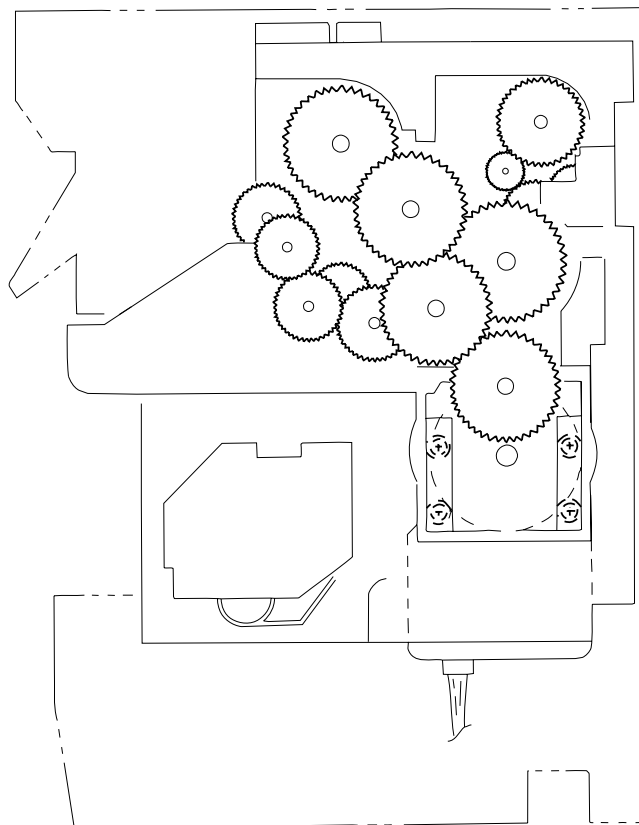


Figure 3-26. Drive Unit Gear Engagement

3.2.15 Heater Lamp Removal

3.2.15.1 Left Fusing Lamp Cover Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2 .)
3. Remove 1 CCS screw (3X8) securing Left Fusing Lamp Cover.
4. Remove the Left Fusing Lamp Cover by turning it in clockwise direction.

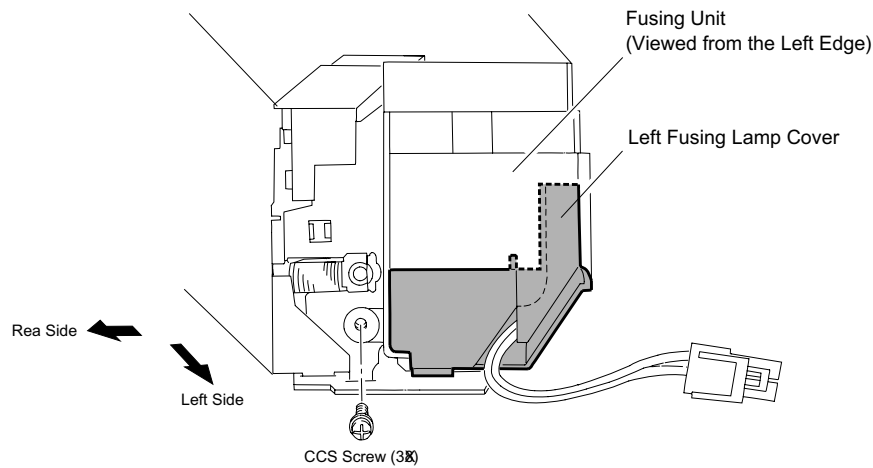


Figure 3-27. Left Fusing Lamp Cover Removal

3.2.15.2 Right Fusing Lamp Cover Removal

1. Remove CCB screw (3X8) securing the Right Fusing Lamp Cover.
2. Slide the Right Fusing Lamp Cover to the right to release the fitting, then remove it.

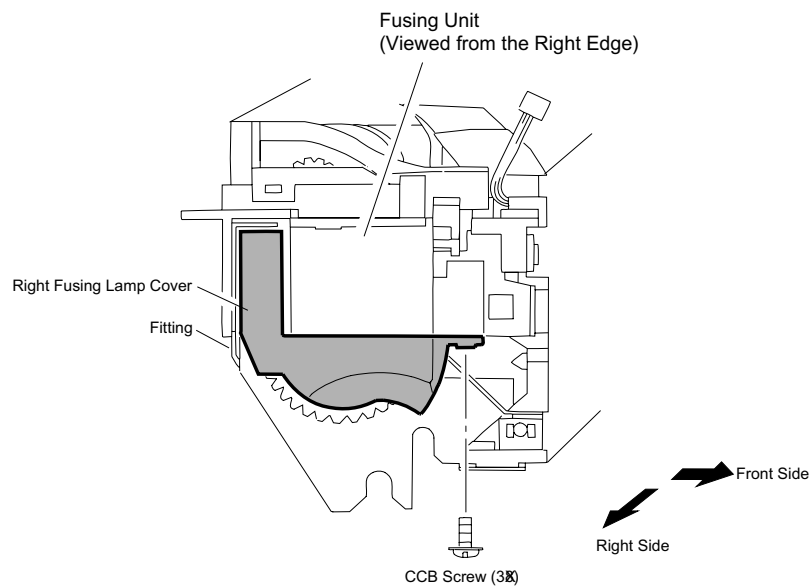


Figure 3-28. Right Fusing Lamp Cover Removal

3.2.15.3 Heater Lamp Removal

1. Release the heater lamp as shown (A) in Figure 3-30.
2. Remove the Heater Lamp from the Fusing Unit.

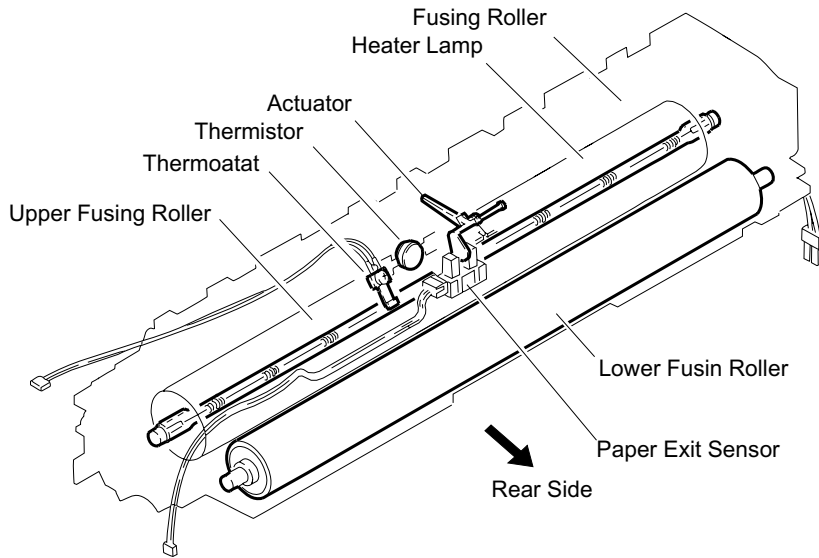


Figure 3-29. Unit Location (3)

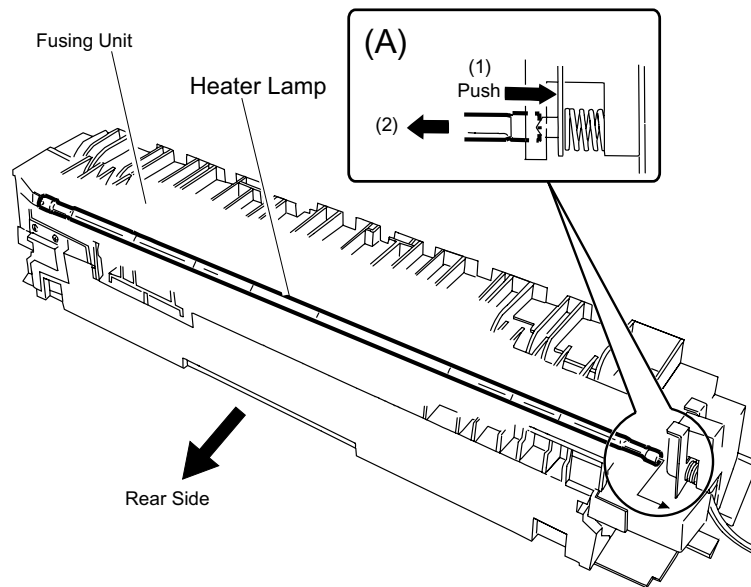


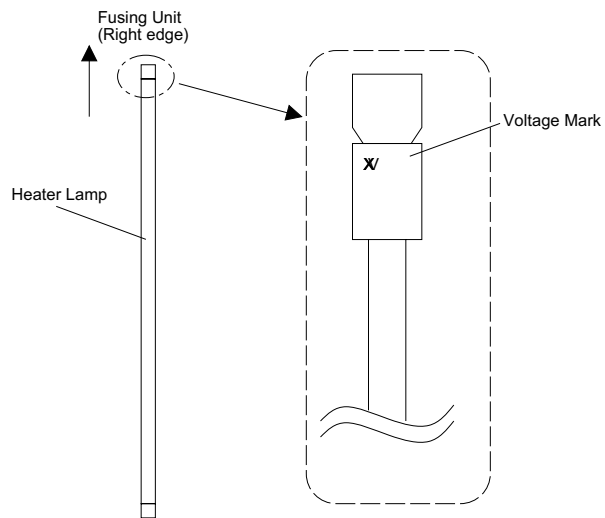
Figure 3-30. Heater Lamp Removal



- ❑ *Be careful not to break the tube lamp when handling it.*
- ❑ *Don't touch the glass part of the tube lamp with your bare hands.*

Assembly Note

Note the direction in which the Heater Lamp is installed. Make sure that the lamp edge with the voltage mark on it is set to the right side of the Fusing Unit.



3.2.16 Paper Exit Sensor Removal

Refer to Figure 3-29.

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Disconnect the connector for the Paper Exit Sensor.
4. Remove the Paper Exit Sensor.
5. Remove the actuator spring.
6. Slide the actuator in the direction indicated by the arrow, then remove it.

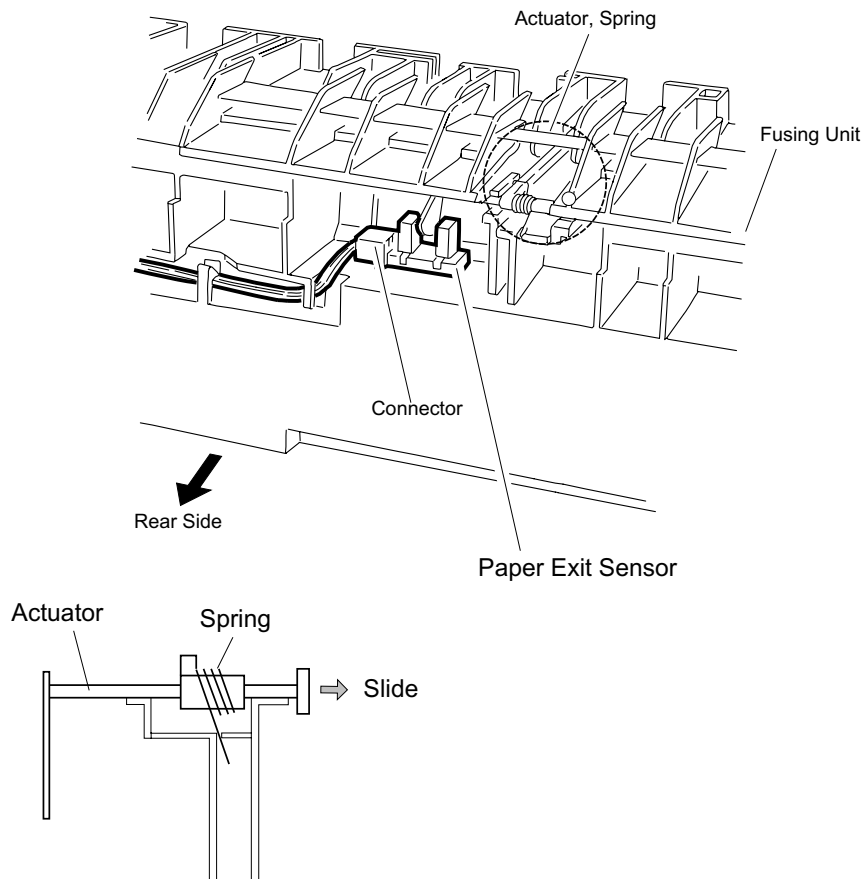


Figure 3-31. Paper Exit Sensor Removal

3.2.17 Lower Fusing Roller Removal

Refer to Figure 3-29.

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Remove 2 CCS screws (3X10) securing the rear fusing cover.
4. Push the lock stoppers indicated by the arrow.
5. Remove the rear fusing cover.
6. Remove the Lower Fusing Roller.

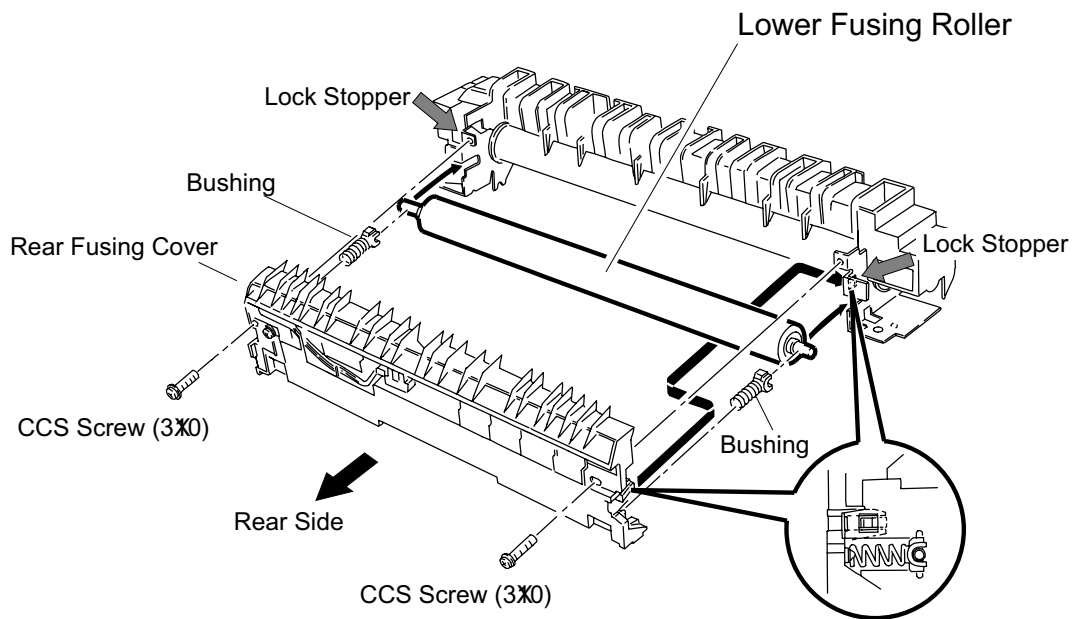


Figure 3-32. Lower Fusing Roller Removal



When removing and installing the rear fusing cover, be careful not to bend the contact spring.

3.2.18 Separator Removal

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Remove the Lower Fusing Roller.
4. Remove the springs that secure the separators to the hooks.
5. Slide the separating rolls, and remove them from the separators.
6. Remove the stoppers.
7. Slide and raise the separators to a right angle, and pull them upward to remove.

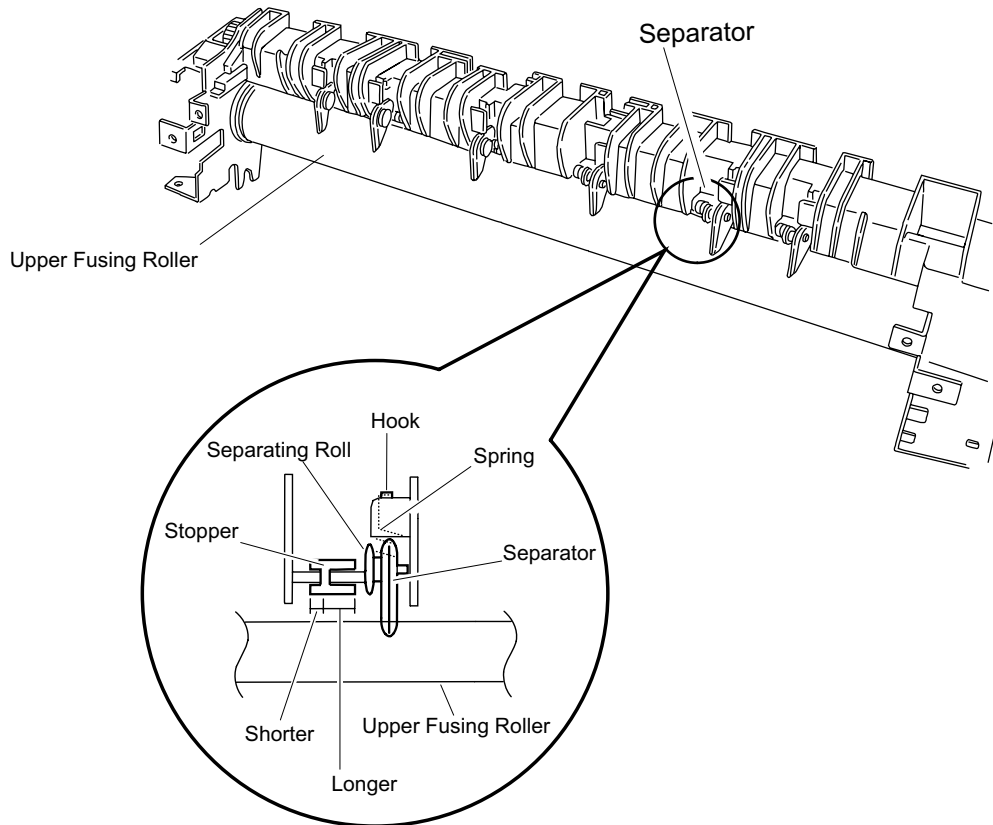


Figure 3-33. Separator Removal

Assembly Note

Note the direction in which the stoppers are placed. The 3 stoppers on the right face in the opposite direction to the 3 on the left.

3.2.19 Thermistor Removal

Refer to Figure 3-29.

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2 .)
3. Remove the Heater Lamp. (Refer to Section 3.2.15.)
4. Remove the Lower Fusing Roller. (Refer to Section 3.2.17.)
5. Remove 2 shoulder screws securing the front fusing cover.
6. Remove the front fusing cover.
7. Remove CPS screw (3X10) securing the thermistor.
8. Remove the thermistor.

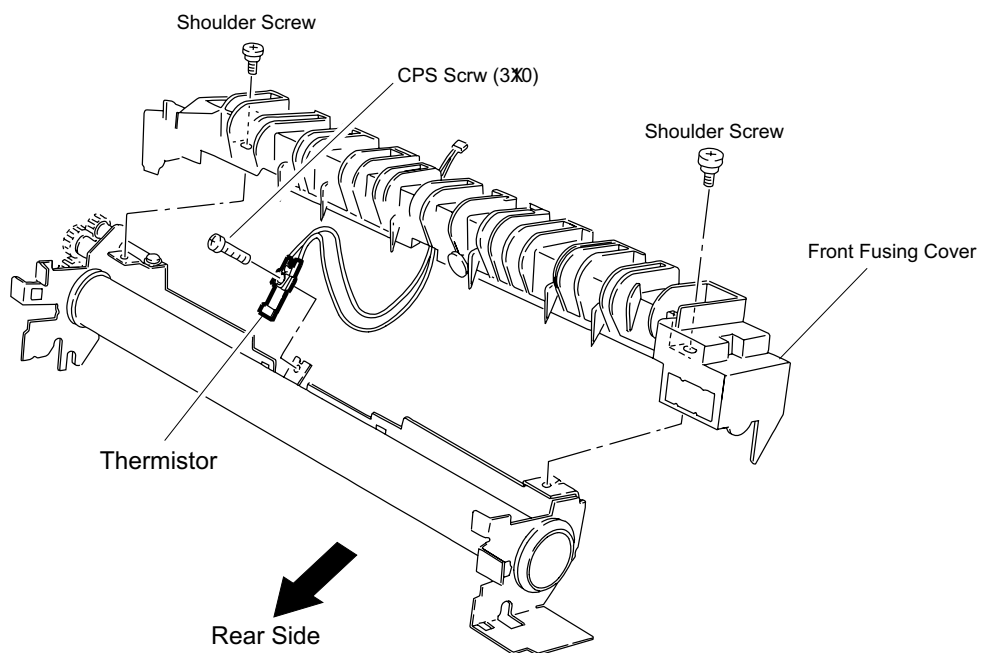


Figure 3-34. Thermistor Removal

3.2.20 Thermostat Removal

Refer to Figure 3-29.

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Remove the Heater Lamp. (Refer to Section 3.2.15.)
4. Remove the Lower Fusing Roller. (Refer to Section 3.2.17.)
5. Remove the front fusing cover. (Refer to Section 3.2.19.)
6. Remove 2 CB(S-P1) screws (3X6) securing the thermostat.
7. Remove the thermostat.

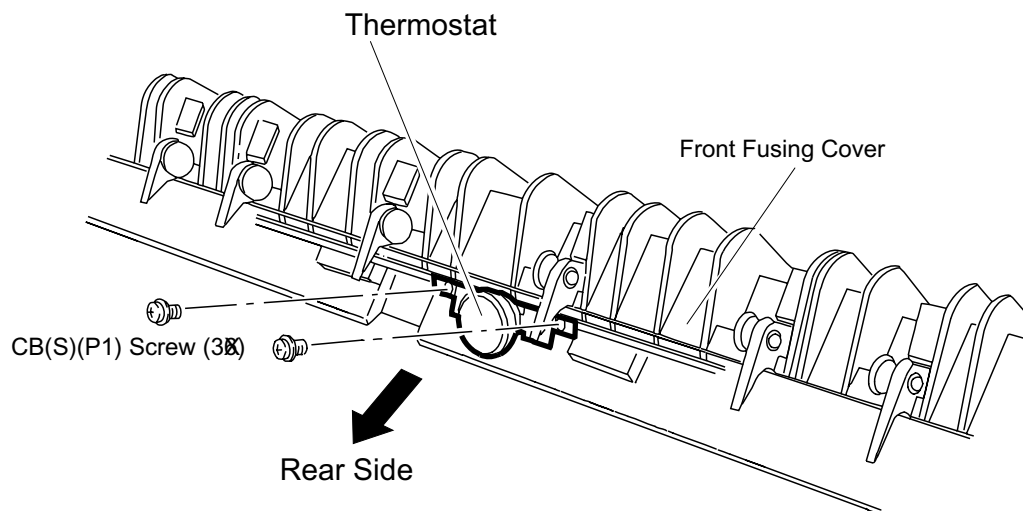


Figure 3-35. Thermostat Removal

3.2.21 Upper Fusing Roller Removal

Refer to Figure 3-29.

1. Remove the outer covers. (Refer to Section 3.2.1.)
2. Remove the Fusing Unit. (Refer to Section 3.2.2.)
3. Remove the Heater Lamp. (Refer to Section 3.2.15.)
4. Remove the Lower Fusing Roller. (Refer to Section 3.2.17.)
5. Remove the front fusing cover. (Refer to Section 3.2.19.)
6. Remove 2 G rings from the right and left edges.
7. Remove the gear, ring, and bushings.
8. Slide the Upper Fusing Roller to the gear side and remove it.

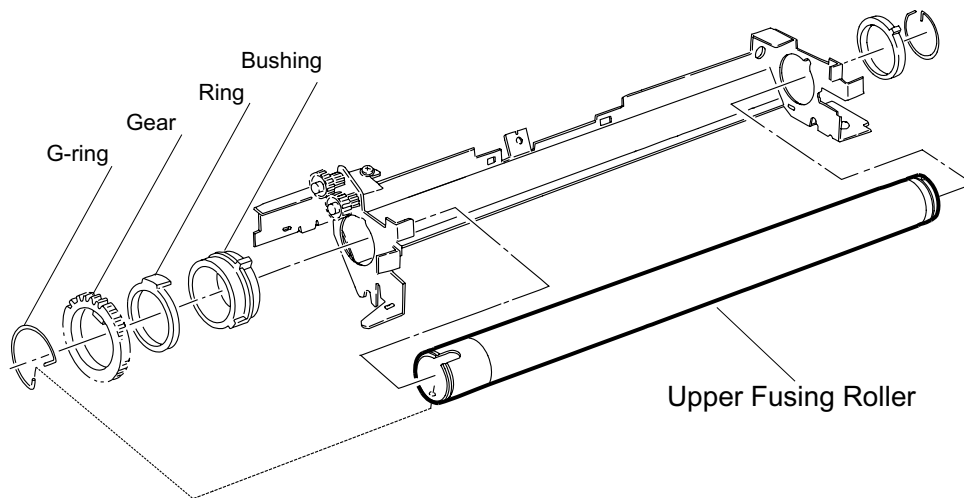


Figure 3-36. Upper Fusing Roller Removal

3.2.22 Main Motor Removal

1. Remove the Drive Unit. (Refer to Section 3.2.15.)
2. Remove 3 CCB screws (3X8) securing the frame inside the Drive Unit.
3. Remove 2 CCS screws (3X6) securing the right frame outside the Drive Unit.
4. Remove the frames.
5. Remove 4 CCS screws (3X6) securing the main motor inside the Drive Unit.
6. Remove the main motor.

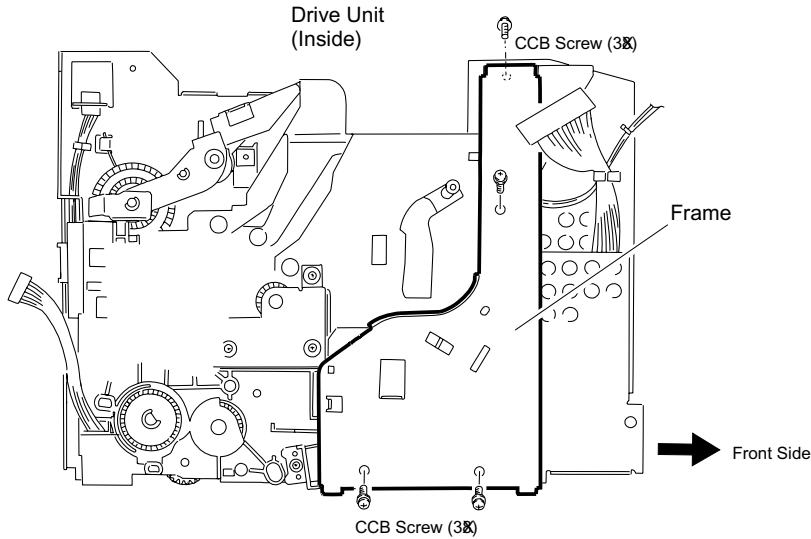


Figure 3-37. Main Motor Removal (1)

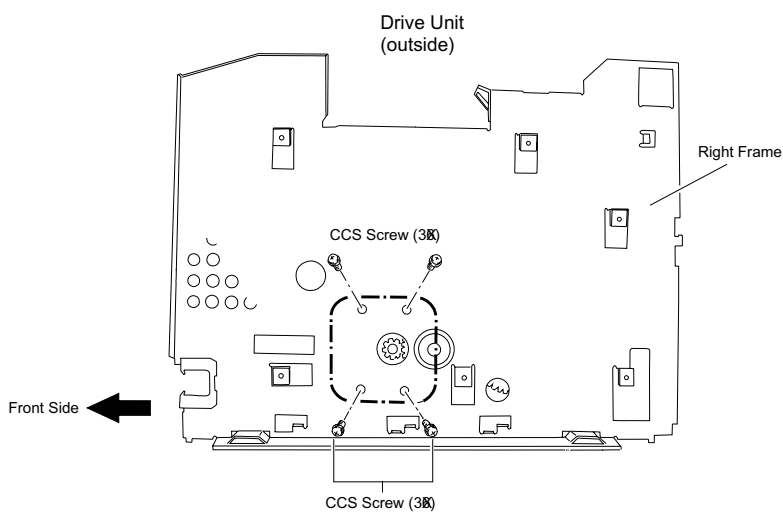


Figure 3-38. Main Motor Removal (2)

3.2.23 Interlock Switch Removal

1. Remove the main motor. (Refer to Section 3.2.22.)
2. Remove the E ring for the right frame.
3. Remove 10 CCB screws (3X8) securing the right frame.
4. Remove the right frame.
5. Remove 2 CB(S-P1) screws securing the interlock switch, along with the bracket.

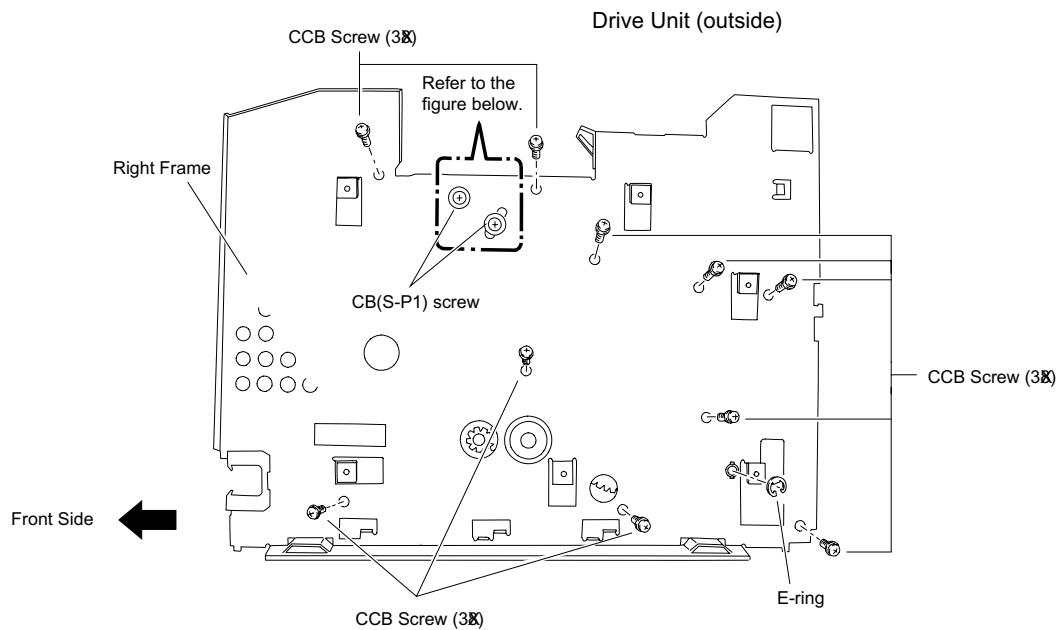


Figure 3-39. Interlock Switch Removal (1)

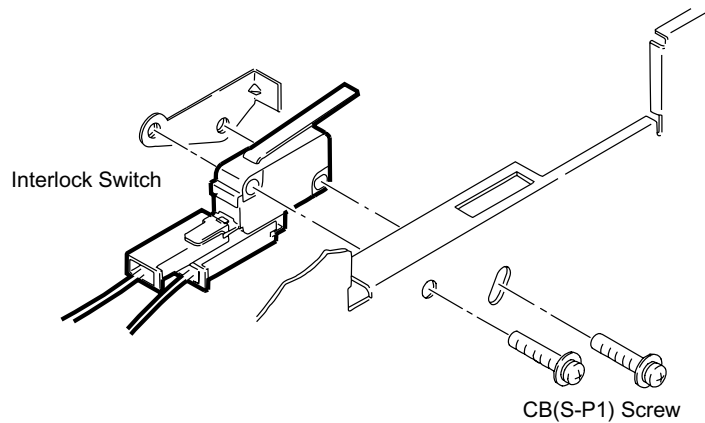


Figure 3-40. Interlock Switch Removal (2)

3.2.24 Paper Takeup Solenoid Removal

1. Remove the right frame for the Drive Unit. (Refer to Section 3.2.23.)
2. Remove CCB screw (3X8) securing the solenoid.
3. Remove the solenoid.

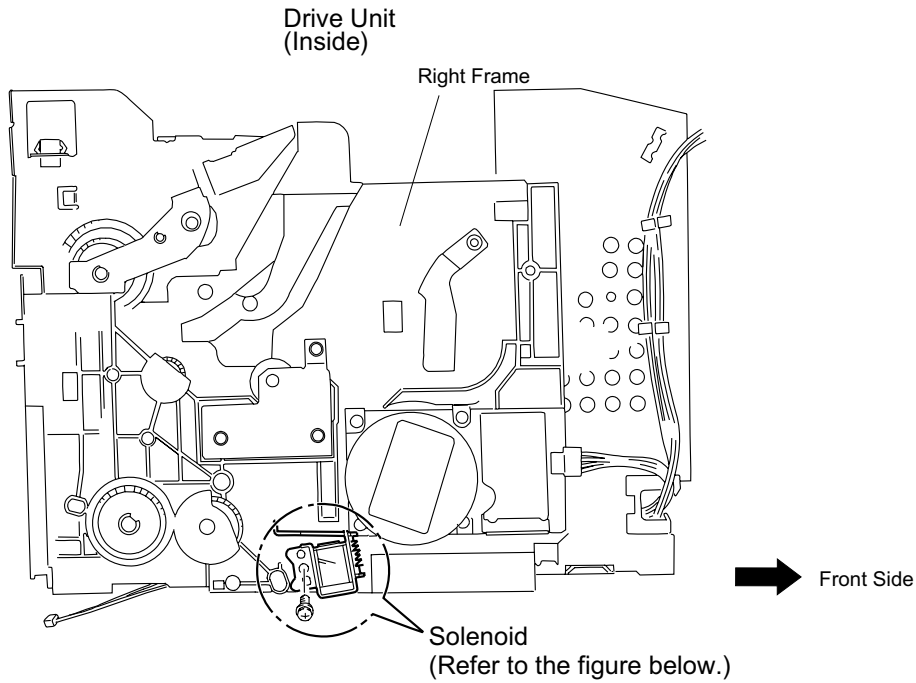


Figure 3-41. Paper Takeup Solenoid Removal (1)

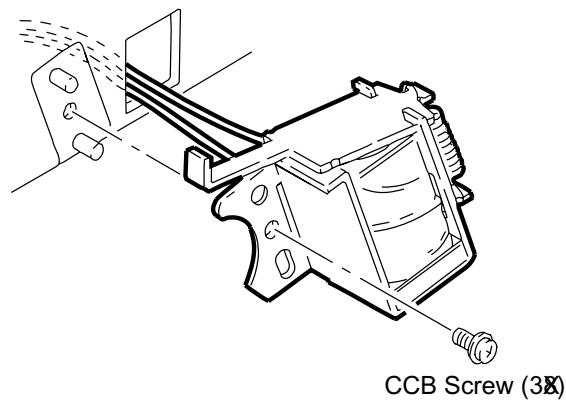


Figure 3-42. Paper Takeup Solenoid Removal

Chapter 4 Adjustment

No adjustment is required in this product.

CHAPTER 5 TROUBLESHOOTING

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5.1 OVERVIEW

Types of errors that may produce a similar symptom in a page printer, such as poor print quality or abnormal operation, vary widely, making identification of failed parts and components more difficult. To overcome such problems for this printer, this section describes troubleshooting procedures using the printer's built-in self-diagnostic function for easy and efficient repair.

5.2 SELF-DIAGNOSTIC FUNCTION

This printer's control circuit is equipped with a self-diagnostic function that checks the operating conditions for each component. If the printer detects an error that a user cannot recover from, the printer displays the location and error code on the LCD panel. The message is as follows:

Service Req *effff*

In the message above, *e* represents the error type and *ffff* represents the error code. Errors are divided into two categories: E and C.

- ❑ E: Related to the engine.
- ❑ C: Related to the controller.

Table 5-1 lists error types and error codes.

Table 5-1. Service Call Error

| Error Type | Error Code | Description |
|------------|--|--|
| E | 0003 | Fusing unit error |
| | 0004 | Main motor error |
| | 0005 | Fan motor error |
| | 0006 | Polygon motor or laser scanner error |
| | 0009 | Laser diode error |
| | 0014 | Engine communication error |
| C | 0001 | CPU error (Reserved) |
| | 0002 | CPU error (Privilege violation) |
| | 0003 | CPU error (Illegal instruction) |
| | 0004 | CPU error (Unsupported FPU instruction) |
| | 0007 | CPU error (Address misalignment) |
| | 0009 | CPU error (Reserved) |
| | 0010 | CPU error (Tag overflow) |
| | 0017 to 0031 | CPU error (Unsupported interrupt) |
| | 0036 | CPU error (Unsupported coprocessor instruction) |
| | 0128 to 0254 | CPU error (Unimplemented instruction) |
| | 0255 | CPU error (Break error) |
| | 1000 | Standard RAM error (RAM not recognized) |
| | 1001 | Standard RAM error (Minimum stack unrecognized) |
| | 1002 | Standard RAM error (Memory address less than 4MB) |
| | 1003 | Optional RAM error (Memory address 4MB or more) |
| | 1100 | ROM checksum error (bit 0 to 15, font) |
| | 1101 | ROM checksum error (bit 16 to 31, font) |
| | 1120 | ROM checksum error (bit 0 to 7, program) |
| | 1121 | ROM checksum error (bit 8 to 15, program) |
| | 1122 | ROM checksum error (bit 16 to 23, program) |
| 1123 | ROM checksum error (bit 24 to 31, program) | |
| 1170 | NLSP Font ROM checksum error | |
| 1180 | Optional ROM SIMM checksum error | |

Table 5-1. Service Call Error (Continued)

| Error Type | Error Code | Description |
|-----------------|------------|---------------------------------|
| C | 1190 | Cartridge access error |
| | 1200 | EEPROM write error |
| | 1210 | EEPROM write counter overflow |
| | 1300 | Type B Interface error |
| | 1320 | LocalTalk / Serial module error |
| | 1400 | Engine initialization error |
| | 1999 | Hardware error |
| | 2000 | Software error |
| A, B, D, F to Z | XXXX | Software error |

5.3 TROUBLESHOOTING

This section describes troubleshooting abnormal operations and print quality problems.

5.3.1 Troubleshooting Abnormal Operations

When the printer detects an error, use Table 5-2 to identify the symptom and the reference table number. If a service call error has occurred, follow the steps below before taking an action.

1. Note the error code.
2. Turn off the printer.
3. Turn the printer back on to see if the same message still appears.

Table 5-2. Symptoms and Reference Tables

| Symptom Message | Printer Condition | Reference Table |
|--------------------------------------|---|-----------------|
| The printer does not operate at all. | The main motor does not rotate when the printer is on. Therefore, the RAM check is not started. | 5-3 |
| RAM check does not start. | RAM check is not started when the printer is turned on. | 5-4 |
| "Printer Open" | The paper cover is closed, but the LCD still displays "Printer Open." | 5-5 |
| "Paper Out" | Paper is loaded, but the LCD displays "Paper Out." | 5-6 |
| "Paper Jam" | The LCD panel displays "Paper Jam" at power on or when paper is loaded. | 5-7 |
| "Feed Jam" | The LCD displays "Feed Jam" when the MP tray is used. | 5-8 |
| | The LCD displays "Feed Jam" when the standard lower paper cassette is used. | |
| | The LCD displays "Feed Jam" when the optional lower paper cassette is used. | |
| "Toner Out" | The LCD displays "Toner Out" when a new Imaging cartridge is installed. | 5-9 |
| "Write Error Card" | The LCD displays "Write Error Card" when an IC card is inserted. | 5-10 |
| "Service Req XXXX" | XXXX = "E0003" Fusing unit error | 5-11 |
| | XXXX = "E0004" Main motor error | 5-12 |
| | XXXX = "E0005" Fan motor error | 5-13 |
| | XXXX = "E0006" Polygon motor or laser scanner error | 5-14 |
| | XXXX = "E0009" Laser diode error | 5-14 |
| | XXXX = "E0014" Engine communication error | 5-15 |
| | XXXX = "C1000/1001/1002" | 5-16 |
| | XXXX = "C1003" | 5-17 |
| | XXXX = "C1100/1101" | 5-18 |
| | XXXX = "C1120/1121/1122/1123" | 5-19 |
| | XXXX = "C1180" | 5-20 |
| | XXXX = "C1200/1210" | 5-21 |
| | XXXX = "C1400" | 5-22 |
| XXXX = "Other errors" | 5-23 | |

Table 5-3. The Printer Does Not Operate at All

| Step | Cause | Checkpoint | Finding | Solution |
|------|---|--|---------|-----------------------------|
| 1 | Connector CN4 on the PWB-A board may not be connected properly. | Is the cable from the PWB-E Board properly connected? | Yes | Connect the cable properly. |
| 2 | The fuse on the PWB-E board has blown. | Has fuse F2 on the PWB-E board blown? | Yes | Replace the fuse. |
| 3 | Connector CN4 on the PWB-E board may not be properly connected. | Is the cable from the PWB-A board properly connected? | Yes | Connect the cable properly. |
| 4 | The PWB-E board may be bad. | When turning on the printer, check the output between pin 7 (+) and pin 5 (-) of CN4 on the PWB-A board. Is the output HIGH? | No | Replace the PWB-E board. |
| 5 | The PWB-A board may be bad. | --- | --- | Replace the PWB-A board. |

Table 5-4. RAM Check is Not Started

| Step | Cause | Checkpoint | Finding | Solution |
|------|-------------------------------|---|---------|-------------------------|
| 1 | C207 MAIN board may be bad. | Is a RAM check performed when the main board is replaced? | Yes | Replace the main board. |
| 2 | The control panel may be bad. | --- | --- | Replace the panel. |

Table 5-5. The LCD Displays "Printer Open"

| Step | Cause | Checkpoint | Finding | Solution |
|------|--|--|---------|-----------------------------------|
| 1 | The interlock switch and the top cover do not engage securely. | Is the interlock switch lever pressed when the top cover is closed? | No | Reposition the interlock switch . |
| 2 | The interlock switch may be bad. | <ol style="list-style-type: none"> 1. Disconnect connector CN3 on the PWB-E board. 2. Place a meter on the connector on the interlock switch side. 3. Alternate the switch on and off. Is the current detected? | No | Replace the interlock switch. |
| 3 | PWB-E board may be bad. | Check the output of test pin TP2 on the PWB-A board. Is the output +24 V? | No | Replace the PWB-E board. |

Table 5-6. The LCD Displays "Paper Out"

| Step | Cause | Checkpoint | Finding | Solution |
|------|---|--|---------|--|
| 1 | The paper empty sensor actuator may be bad. | Does the sensor operate smoothly? Is the actuator in good condition? | No | Reposition the actuator or replace it. |
| 2 | The paper empty sensor may be bad. | Check the outputs of pin 7 of CN6 on the PWB-A board. Correct levels: HIGH: No paper is loaded. LOW: Paper is loaded. Are the outputs correct? | No | Replace the PE1 sensor. |

Table 5-7. The LCD Displays "Paper Jam"

| Step | Cause | Checkpoint | Finding | Solution |
|------|---|---|---------|---|
| 1 | The actuator for the paper takeup sensor, paper exit sensor, or the registration sensor may be bad. | Are those actuators properly positioned? | No | Reinstall the actuators in the correct positions. |
| 2 | The paper takeup sensor, paper exit sensor, or the registration sensor may not be connected properly. | Are the cables connected properly to the takeup sensor connector, paper exit sensor connector, and the registration sensor connector? | No | Reconnect the sensor properly. |
| 3 | The paper takeup sensor may be bad. | Check the outputs of pin 6 of CN10 against pin 4 on the PWB-A board. Correct levels: HIGH: No paper is loaded. LOW: Paper is loaded. Are the outputs correct? | No | Replace the paper takeup sensor. |
| 4 | The paper exit sensor may be bad. | Check the outputs of pin 3 of CN13 against pin 1 on the PWB-A board. Correct levels: HIGH: No paper is loaded. LOW: Paper is loaded. Are the outputs correct? | No | Replace the paper exit sensor. |
| 5 | The registration sensor may be bad. | Check the outputs of pin 5 of CN10 against pin 1 on the PWB-A board. Correct levels: HIGH: No paper is loaded. LOW: Paper is loaded. Are the outputs correct? | No | Replace the registration sensor. |

Table 5-8. The LCD Displays "Feed Jam"

| Step | Cause | Checkpoint | Finding | Solution |
|------|--|---|---------|--|
| 1 | The main motor may be bad. | When turning on the printer, check the output of pin 2 of CN5 on the PWB-A board. Is the output HIGH? | No | Replace the main motor. |
| 2 | Paper takeup solenoid may be bad. | If the paper takeup solenoid does not turn, disconnect the cable from connector CN12 on the PWB-A board and check the coil resistance (at 20° C, 68 F) Is the resistance $80\ \Omega \pm 10\%$? | No | Replace the pickup solenoid (feed solenoid). |
| | | If the solenoid coil is shorted, check the current between pin 2 of CN12 on the PWB-A board and GND. Is any current detected? | No | Replace the paper takeup solenoid and the PWB-A board. |
| 3 | The paper takeup roller assembly may be bad. | Is paper taken up normally (without slipping)? | No | Clean the paper takeup assembly, or replace it. |

Table 5-9. The LCD Displays "Toner Out"

| Step | Cause | Checkpoint | Finding | Solution |
|------|---|------------|---------|--------------------------------|
| 1 | The toner in the Imaging cartridge has run out. | --- | --- | Replace the Imaging cartridge. |

Table 5-10. The LCD Displays "Write Error Card"

| Step | Cause | Checkpoint | Finding | Solution |
|------|---------------------------------------|--|---------|------------------------------|
| 1 | The installed IC card may be illegal. | Can this printer use the installed IC card? (Refer to Table 1-1 in Chapter 1.) | No | Remove the illegal card. |
| 2 | The installed IC card may be dead. | Does the printer recognize another legal card ? | Yes | Replace the IC card. |
| 3 | C207 MAIN board may be bad. | Install an IC card that works with another EPL-N2000. Does the printer recognize the card? | No | Replace the C207 MAIN board. |

Table 5-11. The LCD Displays "Service Req. E0003"

| Step | Cause | Checkpoint | Finding | Solution |
|------|--|---|---------|--------------------------|
| 1 | The connector may be connected improperly. | Is CN2 on the PWB-E board properly connected ? | No | Connect it properly. |
| 2 | The thermistor may be bad. | Is operation OK when the thermistor is replaced? | Yes | Replace the thermistor. |
| 3 | The heater lamp may be bad. | Turn the printer on when the fusing unit is cold. Does the heater lamp light up ? | No | Replace the heater lamp. |
| 4 | The thermostat may be bad. | Check the thermostat current at normal temperature. Is a current detected? | No | Replace the thermostat. |

Table 5-12. The LCD Displays "Service Req. E0004"

| Step | Cause | Checkpoint | Finding | Solution |
|------|--|---|---------|-------------------------|
| 1 | The connector may be connected improperly. | Is connector CN5 on the PWB-A board properly connected? | No | Connect it properly. |
| 2 | The main motor may be bad. | Replace the main motor. Is operation OK? | Yes | Replace the main motor. |
| 3 | The PWB-E board may be bad. | --- | --- | Replace the PWB-A board |

Table 5-13. The LCD Displays SERVICE REQ. E0005

| Step | Cause | Checkpoint | Finding | Solution |
|------|--|--|---------|---|
| 1 | The connector may be connected improperly. | Are connectors CN5 and CN12 (relay connectors) on the PWB-A board properly connected? Is connector CN2 on the PWB-F board properly connected? | No | Connect them properly. |
| 2 | The PWB-E/ PWB-F board may be bad. | Does the power supply fan rotate if the PWB-E board is replaced? Does the fusing fan rotate if the PWB-F board is replaced? | Yes | Replace the PWB-E board or PWB-F board. |
| 3 | The PWB-A board may be bad. | --- | --- | Replace the PWB-A board. |

Table 5-14. The LCD Displays SERVICE REQ. E0006/0009

| Step | Cause | Checkpoint | Finding | Solution |
|------|---|---|---------|------------------------------|
| 1 | The connectors may be connected improperly. | Are the connectors on the PWB-A board properly connected? | No | Connect them properly. |
| 2 | The PWB-A board may be bad. | Is operation OK when the PWB-A board is replaced? | Yes | Replace the PWB-A board. |
| 3 | The print head may be bad. | Is operation OK when the print head is replaced? | Yes | Replace the print head unit. |

Table 5-15. The LCD Displays SERVICE REQ. E0014

| Step | Cause | Checkpoint | Finding | Solution |
|------|---|---|---------|-------------------------|
| 1 | The connectors may be connected improperly. | Are the connectors on the C207 MAIN board properly connected? | No | Connect them properly. |
| 2 | C207 MAIN board may be bad. | Is operation OK when the C207 MAIN board is replaced? | Yes | Replace the main board. |

Table 5-16. The LCD Displays SERVICE REQ. C1000/1001/1002

| Step | Cause | Checkpoint | Finding | Solution |
|------|-----------------------------|------------|---------|-------------------------|
| 1 | C207 MAIN board may be bad. | --- | --- | Replace the main board. |

Table 5-17. The LCD Displays SERVICE REQ. C1003

| Step | Cause | Checkpoint | Finding | Solution |
|------|-----------------------------------|--|---------|-------------------------|
| 1 | The optional RAM SIMM may be bad. | Is the error cleared when the optional RAM is removed? | Yes | Replace it. |
| 2 | C207 MAIN board may be bad. | --- | --- | Replace the main board. |

Table 5-18. The LCD Displays "Service Req. C1100/1101"

| Step | Cause | Checkpoint | Finding | Solution |
|------|-----------------------------|--|---------|-------------------------|
| 1 | The CG ROM may be bad. | Is operation OK when the CG ROM is replaced? C1100: Replace IC32 C1101: Replace IC31 | Yes | Replace the ROM. |
| 2 | C207 MAIN board may be bad. | --- | --- | Replace the main board. |

Table 5-19. The LCD Displays SERVICE REQ. C1120/1121/1122/1123

| Step | Cause | Checkpoint | Finding | Solution |
|------|-----------------------------|--|---------|---|
| 1 | The PROG ROM may be bad. | Is operation OK when the PROG ROM is replaced? C1120: Replace IC30 C1121: Replace IC30 C1122: Replace IC29 C1123: Replace IC29 | Yes | Replace the ROM (IC29/30). If ICs 1, 2, 3, and 4 are attached, replace them instead. |
| 2 | C207 MAIN board may be bad. | --- | --- | Replace the main board. |

Table 5-20 The LCD Displays "Service Req. C1180"

| Step | Cause | Checkpoint | Finding | Solution |
|------|-----------------------------------|--|---------|-------------------------|
| 1 | The optional ROM SIMM may be bad. | Is operation OK when the ROM SIMM is replaced? | Yes | Replace the ROM SIMM. |
| 2 | C207 MAIN board may be bad. | --- | --- | Replace the main board. |

Table 5-21. The LCD Displays "Service Req. C1200/1210"

| Step | Cause | Checkpoint | Finding | Solution |
|------|-----------------------------|--|---------|-------------------------|
| 1 | The EEPROM may be bad. | Perform EEPROM initialization. (Note that the information including the page counter will be lost.) Is operation OK? | Yes | Replace the EEPROM. |
| 2 | C207 MAIN board may be bad. | --- | --- | Replace the main board. |

Table 5-22. The LCD Displays "Service Req. C1400"

| Step | Cause | Checkpoint | Finding | Solution |
|------|-----------------------------|--|---------|-------------------------|
| 1 | C207 MAIN board may be bad. | Is operation OK when the main board is replaced? | Yes | Replace the main board. |

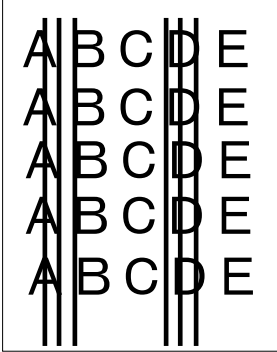
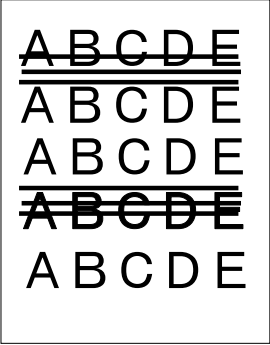
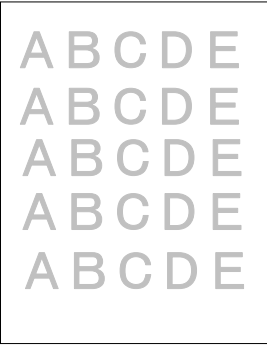
Table 5-23. The LCD Displays Other Error Codes

| Step | Cause | Checkpoint | Finding | Solution |
|------|-----------------------------|--|---------|-------------------------|
| 1 | C207 MAIN board may be bad. | Is operation OK when the main board is replaced? | Yes | Replace the main board. |

5.3.2 Troubleshooting Print Quality Problems

This section describes how to isolate print quality problems from their possible causes and remedy them, as shown in Table 5-24.

Table 5-24. Print Quality Problems

| Symptom | Possible Cause | Solution |
|---|---|--|
| Black/white lines (vertical)  | Dust, lint in the print head unit (white lines) | Clean the print head unit window. Replace the print head unit. |
| | Dust, lint in the transfer roller (white lines) | Clean the transfer roller. |
| | Scratches on the PC drum (black lines) | Replace the Imaging cartridge. |
| | Low main charge voltage (black lines) | Replace high voltage power supply and check contacts. |
| Horizontal lines  | Dust on the gears | Remove the dust. Replace the drive unit. |
| | Uneven rotation of the polygon motor | Replace the print head unit. |
| Low image density  | Low development bias | Replace the high-voltage unit (PWB-F). Adjust the density by SelecType. |
| | Toner empty | Replace the Imaging cartridge. |

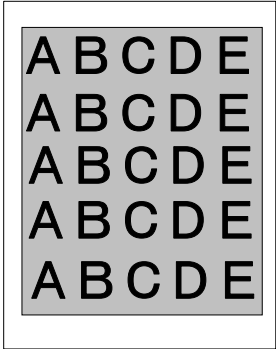
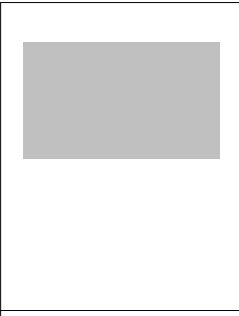
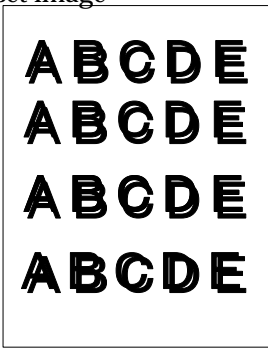
| | | |
|---|-----------------------|--|
| Foggy background  | High development bias | Replace the high-voltage unit (PWB-F). |
| | End of PC drum life | Replace the Imaging cartridge. |

Table 5-24. Print Quality Problems

| Symptom | Possible Cause | Solution |
|---|---|---|
| No image printed (Blank / completely black)  | High development bias | Replace the high-voltage unit (PWB-E). Replace the Imaging cartridge. |
| | Low development bias | |
| Offset image  | Improper transfer | Clean the transfer unit or the fusing unit. |
| | The fusing roller does not grip paper properly. | Wipe the dust off the fusing roller. |

CHAPTER 6 MAINTENANCE

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6.1 MAINTENANCE

This section gives information necessary for maintaining the printer in its optimum condition. Appropriate maintenance after troubleshooting, as well as after the occasional replacement of worn out units, is essential to prevent potential problems from occurring.

Maintenance items described in this section are divided into two subsections: user maintenance and service maintenance (performed only by qualified repair personnel).

6.1.1 User Maintenance

Users can achieve maximum print quality from the printer by following the instructions in Table 6-1.

Table 6-1. Instructions for User Maintenance

| Item | Occasion | Procedure |
|--------------------------------|---|---|
| Clean the printhead unit glass | Abnormal symptom such as vertical lines appear. | Clean the glass surface with a dry, soft cloth. |
| Imaging cartridge replacement | Print quality has deteriorated or the total number of printed pages exceeds the specified maximum (Approximately 8,000 to 10,000 sheets). | Replace the Imaging cartridge. |

6.1.2 Service Maintenance

The EPSON EPL-N2000 does not require any replacement of units at specified intervals. It is, however, recommended that specific units be replaced after periods determined by the total number of sheets printed. This is indispensable in preventing abnormal operations, such as multi-sheet feeds, paper jams, and fusing malfunctions, which can be often caused by worn out units. Refer to Table 6-2 for guidance.

Table 6-2. Instructions for Service Maintenance

| Unit | Printable number of sheets |
|----------------------------------|--|
| The fusing unit | Approximately 60,000 to 120,000 sheets |
| The paper takeup roller assembly | Approximately 120,000 sheets |
| The transfer unit | Approximately 60,000 to 120,000 sheets |

- If dirt sticks, use a moist cloth, and then clean with a dry cloth.***
- Do not use solvents, such as thinner and alcohol.***
- Never touch the surface of the transfer roller. When it needs cleaning, run blank prints repeatedly. Otherwise, remove the transfer unit and blow off the dust using an air gun.***

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A.1 CONNECTOR PIN ASSIGNMENTS

Figures A-1 illustrates the interconnection of the main controller board.

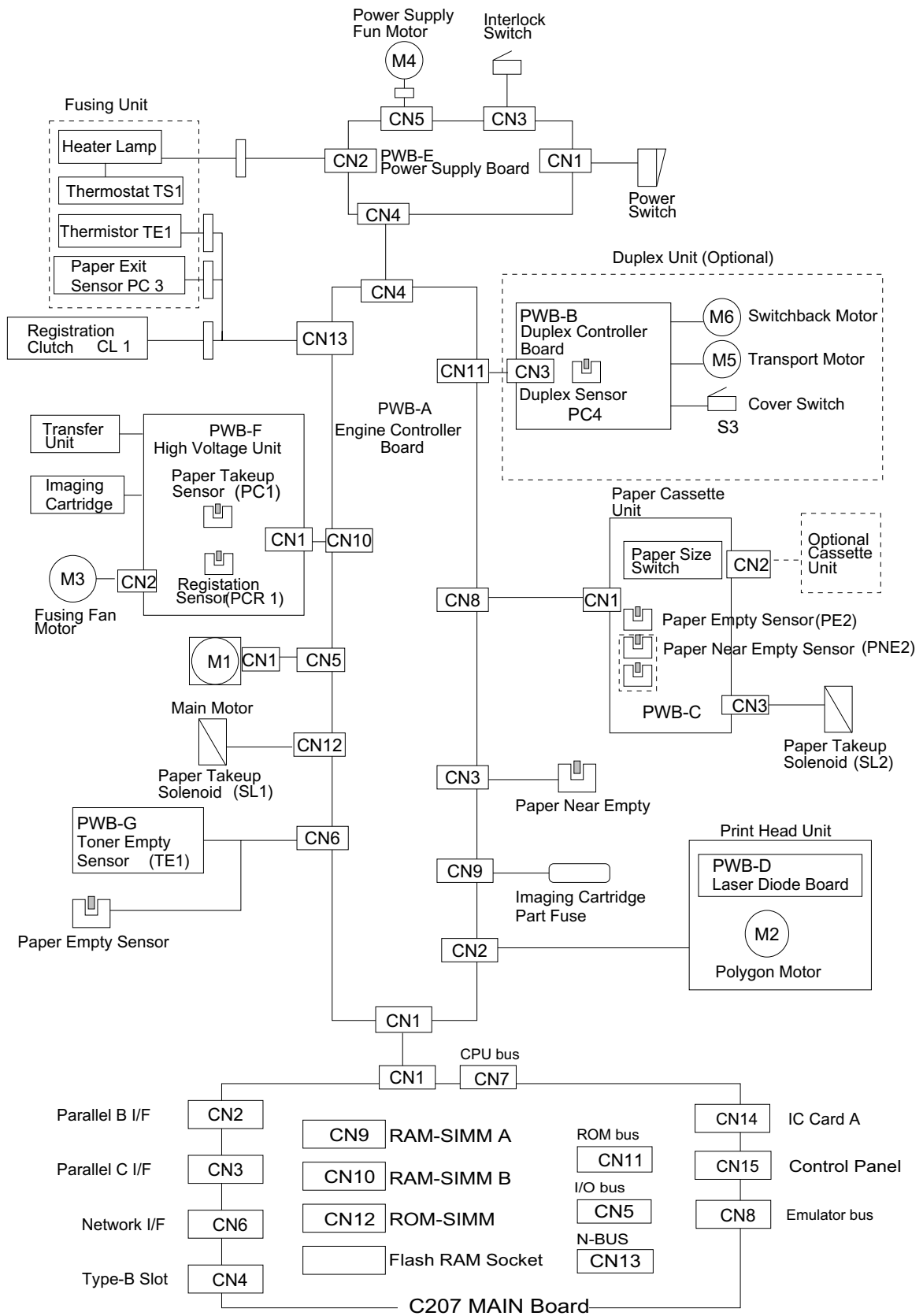


Figure A-1. Main Controller Diagram

Table A-1. PWB-A Board Connector Specifications

| Connector | Description | Pins | Reference Tables |
|-----------|---|------|------------------|
| CN1 | C207 MAIN board | 20 | A-2 |
| CN2 | Printhead unit | 12 | A-4 |
| CN3 | Paper near empty sensor (PNE1) | 3 | A-5 |
| CN4 | Power supply board (PWB-E board) | 8 | A-6 |
| CN5 | Main motor | 4 | A-7 |
| CN6 | Toner empty sensor (TE1) Paper empty sensor (PE1) | 7 | A-8 |
| CN7 | Not used | — | — |
| CN8 | Cassette unit | 10 | A-9 |
| CN9 | Imaging cartridge part fuse | 2 | A-10 |
| CN10 | High voltage unit (PWB-F) | 11 | A-11 |
| CN11 | Duplex unit (optional) | 12 | A-12 |
| CN12 | Paper takeup solenoid | 2 | A-13 |
| CN13 | Paper exit sensor, thermistor, registration clutch | 7 | A-14 |

Table A-2. C207 MAIN Board Connector Specifications

| Connector | Description | Pins | Reference Tables |
|-----------|-----------------------------------|------|------------------|
| CN1 | Video interface (to PWB-A board) | 20 | A-3 |
| CN2 | IEEE 1284 interface (B connector) | 36 | 1-11 (Chapter 1) |
| CN3 | IEEE 1284 interface (C connector) | 36 | 1-13 (Chapter 1) |
| CN4 | Type-B interface | 36 | A-15 |
| CN5 | I / O bus | 40 | A-16 |
| CN6 | Network interface | 8 | 1-15 (Chapter 1) |
| CN7 | CPU bus | 40 | A-17 |
| CN9 | RAM-SIMM 2 | 72 | A-18 |
| CN10 | RAM-SIMM 1 | 72 | A-18 |
| CN11 | ROM bus (to C207 PROG board) | 80 | A-19 |
| CN12 | ROM-SIMM | 72 | A-20 |
| CN14 | IC card slot | 68 | A-22 |
| CN15 | Control panel | 20 | A-23 |

A.1.1 Engine Controller Board (PWB-A Board)

Table A-3 PWB-A, C207 MAIN Board CN1 (Video I/F)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|--|
| 1 | +5V | - | +5 V (Logic power source) |
| 2 | +5V | - | +5 V (Logic power source) |
| 3 | RESET | O | Engine initialize signal |
| 4 | PRRDY | I | Engine print enable signal |
| 5 | STS | I | Communication with the engine controller |
| 6 | CTBSY | O | Command transmit signal |
| 7 | SRCLK | O | Clock signal |
| 8 | TOD | I | Engine ready signal |
| 9 | GND | - | Signal ground |
| 10 | HSYNC | I | Horizontal synchronous signal |
| 11 | +5V | - | +5 V (Logic power source) |
| 12 | - | - | Not used |
| 13 | EPRDY | I | Engine current status signal |
| 14 | ETBSY | I | Engine status transmit signal |
| 15 | CMD | O | Communication with engine controller |
| 16 | PRINT | O | Print start command |
| 17 | CPRDY | O | Controller current status signal |
| 18 | GND | - | Signal ground |
| 19 | VIDEO | O | Video data |
| 20 | GND | - | Signal ground |

Table A-4 PWB-A CN2 (Printhead Unit)

| Pin | Signal Name | I/O | Description |
|-----|---------------|-----|----------------------------------|
| 1 | SSCAN | I | Vertical synchronous signal |
| 2 | LD.MONITOR | I | Laser power detection signal |
| 3 | DA2 | O | Laser power adjust signal 1 |
| 4 | DA1 | O | Laser power adjust signal 2 |
| 5 | GND | - | Ground |
| 6 | LDATA | O | Laser drive signal |
| 7 | +5V | - | Laser diode drive power source |
| 8 | +24V | - | Polygon motor drive power source |
| 9 | GND | - | Ground |
| 10 | POLYGON_MOTOR | O | Polygon motor drive signal |
| 11 | POLYGON_CLOCK | O | Polygon motor clock |
| 12 | POLYGON_LOCK | I | Polygon motor lock signal |

Table A-5 PWB-A CN3 (Paper Near Empty Sensor: PNE1)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|---------------------|
| 1 | ANODE | - | Sensor drive signal |
| 2 | GND | - | Ground |
| 3 | PNE1 | I | Detection signal |

Table A-6 PWB-A CN4 (PWB-E)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|-------------------------------|
| 1 | PW_FAN | O | Power source fan drive signal |
| 2 | HEATER | O | Heater lamp drive signal |
| 3 | GND | - | Ground |
| 4 | +24V | - | +24 V |
| 5 | GND | - | Ground |
| 6 | GND | - | Ground |
| 7 | +5V | - | +5 V |
| 8 | +5V | - | +5 V |

Table A-7 PWB-A CN5 (Main Motor)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|--------------------------|
| 1 | MOTOR_LOCK | I | Motor lock signal |
| 2 | MAIN_MOTOR | O | Motor drive signal |
| 3 | +24V | - | Motor drive power source |
| 4 | GND | - | Ground |

Table A-8 PWB-A CN6 (Toner Empty Sensor: PE1)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|-------------------------------|
| 1 | +5V | - | +5 V |
| 2 | TONER_LEVEL | I | Toner amount detection signal |
| 3 | TONER_LED | O | TE1 sensor LED drive signal |
| 4 | GND | - | Ground |
| 5 | ANODE | - | PE1 anode |
| 6 | GND | - | Ground |
| 7 | P_EMP 1 | I | Paper amount detection signal |

Table A-9 PWB-A CN8 (Paper Cassette Unit)

| Pin | Signal Name | I/O | Description |
|-----|--------------|-----|---|
| 1 | PICK_UP 3 | O | Solenoid SL3 (optional) drive signal |
| 2 | PICK_UP 2 | O | Solenoid SL2 drive signal |
| 3 | 3RD_SIG | I | Optional cassette sensor detection signal |
| 4 | 2ND_SIG | I | Standard cassette sensor detection signal |
| 5 | SIFT_LOAD | O | Sensor identification signal |
| 6 | SENSOR_CLOCK | O | Sensor clock signal |
| 7 | +24V | - | Solenoid drive power source |
| 8 | +5V | - | +5 V |
| 9 | GND | - | Ground |
| 10 | GND | - | Ground |

Table A-10 PWB-A CN9 (Imaging Cartridge Fuse)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|--|
| 1 | +5V | - | Fuse detection/ fuse blow power source |
| 2 | I/C_NEW | I/O | New cartridge detection / fuse blow signal |

Table A-11 PWB-A CN10 (PWB-F)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|--------------------------------------|
| 1 | +5V | - | +5 V |
| 2 | FU_FAN | O | Fan motor drive |
| 3 | +24V | - | +24 V |
| 4 | GND | - | Ground |
| 5 | PCR1 | I | Registration sensor detection signal |
| 6 | PCI | I | Paper takeup sensor detection signal |
| 7 | HV_T_CTL | | Transfer bias control signal |
| 8 | HV_B_CTL | | Development bias control signal |
| 9 | HV_CT | O | High voltage control |
| 10 | B_REM | O | Developer bias On/Off signal |
| 11 | SS_HL_CTL | O | Seal bias HIGH/LOW control |

Table A-12 PWB-A CN11 (Duplex Unit: Option)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|---|
| 1 | GND | - | Ground |
| 2 | +5V | - | +5 V |
| 3 | +24V | - | +24 V |
| 4 | UP_SET | I | Duplex unit detection signal |
| 5 | UP_PS | I | Duplex paper takeup sensor (PC4) detection signal |
| 6 | HANSO_CTL | O | Transport motor control signal |
| 7 | HANSO_B | O | Transport motor control signal B |
| 8 | HANSO_A | O | Transport motor control signal A |
| 9 | HAISI_CTL | O | Switchback motor control signal |
| 10 | HAISI_B | O | Switchback motor control signal B |
| 11 | HAISI_A | O | Switchback motor control signal A |
| 12 | UP_OPEN | I | Cover switch signal detection |

Table A-13 PWB-A CN12 (Paper Solenoid: SL1)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|-----------------------------|
| 1 | +24V | - | Solenoid drive power source |
| 2 | PICK_IP1 | O | Solenoid drive signal |

**Table A-14 PWB-A CN13
(Paper Exit Sensor, Thermistor, Registration Clutch))**

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|------------------------------------|
| 1 | ANODE | - | PC3 anode |
| 2 | GND | - | Ground |
| 3 | +PC3 | | Paper exit sensor detection signal |
| 4 | THERMISTOR | | Thermistor detection sensor |
| 5 | +5V | - | +5 V |
| 6 | +24V | - | +24 V (clutch) |
| 7 | R_CLUTCH | | Registration clutch drive signal |

A.1.2 Video Controller Board (C207 MAIN Board)

Table A-15 C207 MAIN Board CN4 (Type B Interface)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|-------------------------|
| 1 | +5V | - | +5 VDC |
| 2 | +5V | - | +5 VDC |
| 3 | +5V | - | +5 VDC |
| 4 | +5V | - | +5 VDC |
| 5 | +5V | - | +5 VDC |
| 6 | +5V | - | +5 VDC |
| 7 | TXD | O | Serial data transmitted |
| 8 | READY | O | READY signal |
| 9 | RXD | | Serial data received |
| 10 | NC | - | Not used |
| 11 | RESET | O | RESET signal |
| 12 | INH | O | I/F card disable |
| 13 | CMREQ | | Request command |
| 14 | WRRDY | | I/F ready |
| 15 | RDREQ | | Data read request |
| 16 | WR | O | Write enable |
| 17 | RD | O | Read enable |
| 18 | CS | O | Chip select |
| 19 | GND | - | GND |
| 20 | GND | - | GND |
| 21 | GND | - | GND |
| 22 | GND | - | GND |
| 23 | GND | - | GND |
| 24 | GND | - | GND |
| 25 | A3 | O | Address bit 3 |
| 26 | A2 | O | Address bit 2 |
| 27 | A1 | O | Address bit 1 |
| 28 | A0 | O | Address bit 0 |
| 29 | D7 | I/O | Data bit 7 |
| 30 | D6 | I/O | Data bit 6 |
| 31 | D5 | I/O | Data bit 5 |
| 32 | D4 | I/O | Data bit 4 |
| 33 | D3 | I/O | Data bit 3 |
| 34 | D2 | I/O | Data bit 2 |
| 35 | D1 | I/O | Data bit 1 |
| 36 | D0 | I/O | Data bit 0 |

Table A-16 C207 MAIN Board CN5 (I/O Bus)

| Pin | Signal Name | I/O | Description |
|-------|-------------|-----|---|
| 1 | <u>PCLK</u> | I | System clock for 85230-10 |
| 2 | <u>RST</u> | I/O | Reset signal |
| 3 | GND | - | GND |
| 4 | GND | - | GND |
| 5 | GND | - | GND |
| 6 | GND | - | GND |
| 7 | DB0 | I/O | Bidirectional data bus 0 |
| 8 | DB1 | I/O | Bidirectional data bus 1 |
| 9 | DB2 | I/O | Bidirectional data bus 2 |
| 10 | DB3 | I/O | Bidirectional data bus 3 |
| 11 | DB4 | I/O | Bidirectional data bus 4 |
| 12 | DB5 | I/O | Bidirectional data bus 5 |
| 13 | DB6 | I/O | Bidirectional data bus 6 |
| 14 | DB7 | I/O | Bidirectional data bus 7 |
| 15 | AB0 | - | Address bus |
| 16 | AB1 | - | Address bus |
| 17 | AB2 | - | Address bus |
| 18 | AB3 | - | Address bus |
| 19 | <u>AB4</u> | - | Address bus |
| 20 | <u>CS</u> | - | Chip select signal |
| 21 | <u>RD</u> | - | Read signal. Goes LOW with WR signal at reset. |
| 22 | <u>WR</u> | - | Write signal. Goes LOW with RD signal at reset. |
| 23 | <u>IREQ</u> | O | Interruption request signal |
| 24 | <u>NMI</u> | O | Non-maskable interrupt request signal |
| 25 | <u>DREQ</u> | O | DMA request signal |
| 26 | DTCT | O | Board detection signal |
| 27 | +5V | - | +5 V |
| 28 | +5V | - | +5 V |
| 29 | +5V | - | +5 V |
| 30 | +5V | - | +5 V |
| 31 | TXD+ | O | Not used |
| 32 | TXD- | O | Not used |
| 33 | RXD+ | I | Not used |
| 34 | RXD- | I | Not used |
| 35 | DTR | O | Not used |
| 36 | CTS | I | Not used |
| 37 | NC | - | No connection |
| 38 | <u>NC</u> | - | No connection |
| 39 | <u>LCD</u> | I | Not used |
| 40 | SWRD | I | Not used |
| 41~60 | Not used | - | — |

Table A-17 C207 MAIN Board CN7 (CPU Bus)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|--|
| 1 | +5V | - | +5 V |
| 2 | +5V | - | +5 V |
| 3 | A26 | | Address bit 26 |
| 4 | A27 | | Address bit 27 |
| 5 | A28 | | Address bit 28 |
| 6 | A29 | | Address bit 29 |
| 7 | A30 | | Address bit 30 |
| 8 | A31 | | Address bit 31 |
| 9 | ASI10 | I/O | Not used |
| 10 | ASI11 | I/O | Not used |
| 11 | ASI12 | I/O | Address bus data |
| 12 | ASI13 | I/O | Not used |
| 13 | CS0 | O | Chip select signal |
| 14 | CS1 | O | Chip select signal |
| 15 | CS2 | O | Chip select signal |
| 16 | CS3 | O | Chip select signal |
| 17 | CS4 | O | Chip select signal |
| 18 | CS5 | O | Chip select signal |
| 19 | AS | I/O | New bus transaction starts |
| 20 | RD_WR | I/O | Read/write signal |
| 21 | SAMEPG | O | Not used |
| 22 | TMR_OV | | DRAM refresh timing control |
| 23 | LOCK | O | Bus lock signal |
| 24 | ERROR | O | Not used |
| 25 | BREQ | | Bus request signal |
| 26 | BGANT | O | Response to BREQ signal |
| 27 | READY | | Current bus transaction completed |
| 28 | MEXC | | Informs CPU of memory error occurrence |
| 29 | IRL0 | | Interruption request code signal |
| 30 | IRL1 | | Interruption request code signal |
| 31 | IRL2 | | Interruption request code signal |
| 32 | IRL3 | | Interruption request code signal |
| 33 | RESET | | Reset signal |
| 34 | XTAL1 | | Crystal clock signal |
| 35 | CLKOUT1 | O | Clock signal |
| 36 | CLKOUT2 | O | Clock signal |
| 37 | GND | - | GND |
| 38 | GND | - | GND |
| 39 | GND | - | GND |
| 40 | GND | - | GND |

Table A-18 C207 MAIN Board CN9, CN10 (RAM-SIMM)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|---------------|
| 1 | VSS | - | GND |
| 2 | DQ0 | I/O | Data bit 0 |
| 3 | DQ16 | I/O | Data bit 16 |
| 4 | DQ1 | I/O | Data bit 1 |
| 5 | DQ17 | I/O | Data bit 17 |
| 6 | DQ2 | I/O | Data bit 2 |
| 7 | DQ18 | I/O | Data bit 18 |
| 8 | DQ3 | I/O | Data bit 3 |
| 9 | DQ19 | I/O | Data bit 19 |
| 10 | VDD | - | +5 VDC |
| 11 | NC | - | Not used |
| 12 | A0 | O | Address bit 0 |
| 13 | A1 | O | Address bit 1 |
| 14 | A2 | O | Address bit 2 |
| 15 | A3 | O | Address bit 3 |
| 16 | A4 | O | Address bit 4 |
| 17 | A5 | O | Address bit 5 |
| 18 | A6 | O | Address bit 6 |
| 19 | NC | - | Not used |
| 20 | DQ4 | I/O | Data bit 4 |
| 21 | DQ20 | I/O | Data bit 20 |
| 22 | DQ5 | I/O | Data bit 5 |
| 23 | DQ21 | I/O | Data bit 21 |
| 24 | DQ6 | I/O | Data bit 6 |
| 25 | DQ22 | I/O | Data bit 22 |
| 26 | DQ7 | I/O | Data bit 7 |
| 27 | DQ23 | I/O | Data bit 23 |
| 28 | A7 | O | Address bit 7 |
| 29 | NC | - | Not used |
| 30 | VDD | - | +5 VDC |
| 31 | A8 | O | Address bit 8 |
| 32 | A9 | O | Address bit 9 |
| 33 | <u>RAS3</u> | O | RAS3 |
| 34 | <u>RAS2</u> | O | RAS2 |
| 35 | NC | - | Not used |
| 36 | NC | - | Not used |
| 37 | NC | - | Not used |
| 38 | NC | - | Not used |
| 39 | <u>VSS</u> | - | GND |
| 40 | <u>CAS0</u> | O | CAS0 |
| 41 | <u>CAS2</u> | O | CAS2 |
| 42 | <u>CAS3</u> | O | CAS3 |
| 43 | <u>CAS1</u> | O | CAS1 |
| 44 | <u>RAS0</u> | O | RAS0 |
| 45 | <u>RAS1</u> | O | RAS1 |
| 46 | <u>NC</u> | - | Not used |
| 47 | <u>WE</u> | O | Write enable |
| 48 | NC | - | Not used |
| 49 | DQ8 | I/O | Data bit 8 |
| 50 | DQ24 | I/O | Data bit 24 |
| 51 | DQ9 | I/O | Data bit 9 |
| 52 | DQ25 | I/O | Data bit 25 |
| 53 | DQ10 | I/O | Data bit 10 |
| 54 | DQ26 | I/O | Data bit 26 |
| 55 | DQ11 | I/O | Data bit 11 |

Table A-18 C207 MAIN Board CN9, CN10 (RAM-SIMM) (continued)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|-------------|
| 56 | DQ27 | I/O | Data bit 27 |
| 57 | DQ12 | I/O | Data bit 12 |
| 58 | DQ28 | I/O | Data bit 28 |
| 59 | VDD | - | +5 VDC |
| 60 | DQ29 | I/O | Data bit 29 |
| 61 | DQ13 | I/O | Data bit 13 |
| 62 | DQ30 | I/O | Data bit 30 |
| 63 | DQ14 | I/O | Data bit 14 |
| 64 | DQ31 | I/O | Data bit 31 |
| 65 | DQ15 | I/O | Data bit 15 |
| 66 | NC | - | Not used |
| 67 | PD1 | - | Not used |
| 68 | PD2 | - | Not used |
| 69 | PD3 | - | Not used |
| 70 | PD4 | - | Not used |
| 71 | NC | - | Not used |
| 72 | VSS | - | GND |

Table A-19 C207 MAIN Board CN11 (ROM Bus)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|-----------------------------------|
| 1 | +5V | - | Power source |
| 2 | +5V | - | Power source |
| 3 | +5V | - | Power source |
| 4 | +5V | - | Power source |
| 5 | D0 | | Data bit 0 |
| 6 | D16 | | Data bit 16 |
| 7 | D1 | | Data bit 1 |
| 8 | D17 | | Data bit 17 |
| 9 | D2 | | Data bit 2 |
| 10 | D18 | | Data bit 18 |
| 11 | D3 | | Data bit 3 |
| 12 | D19 | | Data bit 19 |
| 13 | D4 | | Data bit 4 |
| 14 | D20 | | Data bit 20 |
| 15 | D5 | | Data bit 5 |
| 16 | D21 | | Data bit 21 |
| 17 | D6 | | Data bit 6 |
| 18 | D22 | | Data bit 22 |
| 19 | D7 | | Data bit 7 |
| 20 | D23 | | Data bit 23 |
| 21 | D8 | | Data bit 8 |
| 22 | D24 | | Data bit 24 |
| 23 | D9 | | Data bit 9 |
| 24 | D25 | | Data bit 25 |
| 25 | D10 | | Data bit 10 |
| 26 | D26 | | Data bit 26 |
| 27 | D11 | | Data bit 11 |
| 28 | D27 | | Data bit 27 |
| 29 | D12 | | Data bit 12 |
| 30 | D28 | | Data bit 28 |
| 31 | D13 | | Data bit 13 |
| 32 | D29 | | Data bit 29 |
| 33 | D14 | | Data bit 14 |
| 34 | D30 | | Data bit 30 |
| 35 | D15 | | Data bit 15 |
| 36 | D31 | | Data bit 31 |
| 37 | GND | - | Ground |
| 38 | GND | - | Ground |
| 39 | CSI0X | | Select signal (input) |
| 40 | CSI2X | | Select signal (input) (not used) |
| 41 | CS00X | | Select signal (output) (not used) |
| 42 | CS01X | O | Select signal (output) (not used) |
| 43 | RDX | O | Read signal |
| 44 | WRX | O | Write signal |
| 45 | BWE0X | O | Bite enable signal |
| 46 | BWE2X | O | Bite enable signal (not used) |
| 47 | BWE1X | O | Bite enable signal (not used) |
| 48 | BWE3X | O | Bite enable signal (not used) |
| 49 | A0 | O | Address bit 0 |
| 50 | A1 | O | Address bit 1 |
| 51 | A2 | O | Address bit 2 |
| 52 | A3 | O | Address bit 3 |
| 53 | A4 | O | Address bit 4 |
| 54 | A5 | O | Address bit 5 |
| 55 | A6 | O | Address bit 6 |

Table A-19 C207 MAIN Board CN11 (ROM Bus) (continued)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|--------------------------|
| 56 | A7 | O | Address bit 7 |
| 57 | A8 | O | Address bit 8 |
| 58 | A9 | O | Address bit 9 |
| 59 | A10 | O | Address bit 10 |
| 60 | A11 | O | Address bit 11 |
| 61 | A12 | O | Address bit 12 |
| 62 | A13 | O | Address bit 13 |
| 63 | A14 | O | Address bit 14 |
| 64 | A15 | O | Address bit 15 |
| 65 | A16 | O | Address bit 16 |
| 66 | A17 | O | Address bit 17 |
| 67 | A18 | O | Address bit 18 |
| 68 | A19 | O | Address bit 19 |
| 69 | A20 | O | Address bit 20 |
| 70 | A21 | O | Address bit 21 |
| 71 | A22 | O | Address bit 22 |
| 72 | A23 | O | Address bit 23 |
| 73 | RD/BYX | I | READY/BUSY status signal |
| 74 | RPX/RESETX | O | Reset signal |
| 75 | VPP | - | Write power source |
| 76 | VPP | - | Write power source |
| 77 | GND | - | Ground |
| 78 | GND | - | Ground |
| 79 | GND | - | Ground |
| 80 | GND | - | Ground |

Table A-20 C207 MAIN Board CN12 (ROM-SIMM)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|--------------------------|
| 1 | VSS | - | Power source |
| 2 | DQ0 | I/O | Data bit 0 |
| 3 | DQ16 | I/O | Data bit 16 |
| 4 | DQ1 | I/O | Data bit 1 |
| 5 | DQ17 | I/O | Data bit 17 |
| 6 | DQ2 | I/O | Data bit 2 |
| 7 | DQ18 | I/O | Data bit 18 |
| 8 | DQ3 | I/O | Data bit 3 |
| 9 | DQ19 | I/O | Data bit 19 |
| 10 | VDD | - | Power source |
| 11 | RD | O | Read signal |
| 12 | A0 | O | Address bit 0 |
| 13 | A1 | O | Address bit 1 |
| 14 | A2 | O | Address bit 2 |
| 15 | A3 | O | Address bit 3 |
| 16 | A4 | O | Address bit 4 |
| 17 | A5 | O | Address bit 5 |
| 18 | A6 | O | Address bit 6 |
| 19 | A10 | O | Address bit 10 |
| 20 | DQ4 | I/O | Data bit 4 |
| 21 | DQ20 | I/O | Data bit 20 |
| 22 | DQ5 | I/O | Data bit 5 |
| 23 | DQ21 | I/O | Data bit 21 |
| 24 | DQ6 | I/O | Data bit 6 |
| 25 | DQ22 | I/O | Data bit 22 |
| 26 | DQ7 | I/O | Data bit 7 |
| 27 | DQ23 | I/O | Data bit 23 |
| 28 | A7 | O | Address bit 7 |
| 29 | A19 | O | Address bit 19 |
| 30 | VDD | - | Power source |
| 31 | A8 | O | Address bit 8 |
| 32 | A9 | O | Address bit 9 |
| 33 | A20 | O | Address bit 20 |
| 34 | EEP | O | Select signal for EEPROM |
| 35 | RESET | O | Reset signal |
| 36 | A21 | O | Address bit 21 |
| 37 | A22 | O | Address bit 22 |
| 38 | A23 | O | Address bit 23 |
| 39 | VSS | - | Power source |
| 40 | A11 | O | Address bit 11 |
| 41 | A13 | O | Address bit 13 |
| 42 | A14 | O | Address bit 14 |
| 43 | A12 | O | Address bit 12 |
| 44 | CS0 | O | Select signal (0) |
| 45 | CS1 | O | Select signal (1) |
| 46 | A18 | O | Address bit 18 |
| 47 | WR | O | Read signal |
| 48 | A17 | O | Address bit 17 |
| 49 | DQ8 | I/O | Data bit 8 |
| 50 | DQ24 | I/O | Data bit 24 |
| 51 | DQ9 | I/O | Data bit 9 |
| 52 | DQ25 | I/O | Data bit 25 |
| 53 | DQ10 | I/O | Data bit 10 |
| 54 | DQ26 | I/O | Data bit 26 |
| 55 | DQ11 | I/O | Data bit 11 |

Table A-20 C207 MAIN Board CN12 (ROM-SIMM) (continued)

| Pin | Signal Name | I/O | Description |
|-----|--------------|-----|----------------|
| 56 | DQ27 | I/O | Data bit 27 |
| 57 | DQ12 | I/O | Data bit 12 |
| 58 | DQ28 | I/O | Data bit 28 |
| 59 | VDD | - | Power source |
| 60 | DQ29 | I/O | Data bit 29 |
| 61 | DQ13 | I/O | Data bit 13 |
| 62 | DQ30 | I/O | Data bit 30 |
| 63 | DQ14 | I/O | Data bit 14 |
| 64 | DQ31 | I/O | Data bit 31 |
| 65 | DQ15 | I/O | Data bit 15 |
| 66 | A16 | O | Address bit 16 |
| 67 | (NC) RDY/BSY | - | Not used |
| 68 | NC | - | Not used |
| 69 | NC | - | Not used |
| 70 | NC | - | Not used |
| 71 | A15 | O | Address bit 15 |
| 72 | VSS | - | Power source |

Table A-21 C207 MAIN Board CN14 (IC Card Slot)

| Pin | Signal Name | I/O | Description |
|-----|-------------|-----|----------------|
| 1 | GND | - | GND |
| 2 | D3 | I/O | Data bit 3 |
| 3 | D4 | I/O | Data bit 4 |
| 4 | D5 | I/O | Data bit 5 |
| 5 | D6 | I/O | Data bit 6 |
| 6 | D7 | I/O | Data bit 7 |
| 7 | CE1 | O | Chip select 1 |
| 8 | A10 | O | Address bit 10 |
| 9 | OE | O | Output enable |
| 10 | A11 | O | Address bit 11 |
| 11 | A9 | O | Address bit 9 |
| 12 | A8 | O | Address bit 8 |
| 13 | A13 | O | Address bit 13 |
| 14 | A14 | O | Address bit 14 |
| 15 | WE | O | Write enable |
| 16 | RDY/BCYX | - | Not used |
| 17 | +5V | - | +5 VDC |
| 18 | VPP1 | - | +5 VDC |
| 19 | A16 | O | Address bit 16 |
| 20 | A15 | O | Address bit 15 |
| 21 | A12 | O | Address bit 12 |
| 22 | A7 | O | Address bit 7 |
| 23 | A6 | O | Address bit 6 |
| 24 | A5 | O | Address bit 5 |
| 25 | A4 | O | Address bit 4 |
| 26 | A3 | O | Address bit 3 |
| 27 | A2 | O | Address bit 2 |
| 28 | A1 | O | Address bit 1 |
| 29 | A0 | O | Address bit 0 |
| 30 | D0 | I/O | Data bit 0 |
| 31 | D1 | I/O | Data bit 1 |
| 32 | D2 | I/O | Data bit 2 |
| 33 | WP | - | Not used |
| 34 | GND | - | GND |
| 35 | GND | - | GND |
| 36 | CD1 | I | Card ID 1 |
| 37 | D11 | O | Data bit 11 |
| 38 | D12 | O | Data bit 12 |
| 39 | D13 | O | Data bit 13 |
| 40 | D14 | O | Data bit 14 |
| 41 | D15 | O | Data bit 15 |
| 42 | CD2 | I | Card ID 2 |
| 43 | RFSH | - | Not used |
| 44 | NC | - | Not used |
| 45 | NC | - | Not used |
| 46 | A17 | O | Address bit 17 |
| 47 | A18 | O | Address bit 18 |
| 48 | A19 | O | Address bit 19 |
| 49 | A20 | O | Address bit 20 |
| 50 | A21 | O | Address bit 21 |
| 51 | +5V | - | +5 VDC |
| 52 | VPP2 | - | Not used |
| 53 | A22 | O | Address bit 22 |
| 54 | A23 | O | Address bit 23 |
| 55 | A24 | O | Address bit 24 |

Table A-21 C207 MAIN Board CN14 (IC Card Slot) (continued)

| Pin | Signal Name | I/O | Description |
|-----|--------------|-----|----------------|
| 56 | A25 | O | Address bit 25 |
| 57 | NC | - | Not used |
| 58 | <u>RESET</u> | O | Reset signal |
| 59 | <u>WAIT</u> | - | Not used |
| 60 | NC | - | Not used |
| 61 | REG | O | Card select |
| 62 | BVD2 | - | Not used |
| 63 | BVD1 | - | Not used |
| 64 | D8 | I/O | Data bit 8 |
| 65 | D9 | I/O | Data bit 9 |
| 66 | <u>D10</u> | I/O | Data bit 10 |
| 67 | <u>CD2</u> | - | Not used |
| 68 | GND | - | GND |

Table A-22 C207 MAIN Board CN15 (Control Panel)

| Pin | Signal Name | I/O | Description |
|-----|--------------|-----|--------------------------|
| 1 | LCDCLK | O | System clock |
| 2 | GND | - | GND |
| 3 | SWINIT | I | Switch interrupt request |
| 4 | GND | - | GND |
| 5 | <u>LCD</u> | O | Select of LCD |
| 6 | <u>A1</u> | I | Address bit 1 |
| 7 | <u>LED</u> | O | LED data write signal |
| 8 | <u>SWRD</u> | O | Switch data read signal |
| 9 | NC | - | Not used |
| 10 | <u>LCDWR</u> | O | LCD data write signal |
| 11 | DB0 | I/O | Data bit 0 |
| 12 | DB1 | I/O | Data bit 1 |
| 13 | DB2 | I/O | Data bit 2 |
| 14 | DB3 | I/O | Data bit 3 |
| 15 | DB4 | I/O | Data bit 4 |
| 16 | DB5 | I/O | Data bit 5 |
| 17 | DB6 | I/O | Data bit 6 |
| 18 | DB7 | I/O | Data bit 7 |
| 19 | +5V | - | +5 VDC |
| 20 | +5V | - | +5 VDC |

A.2 Exploded Diagrams

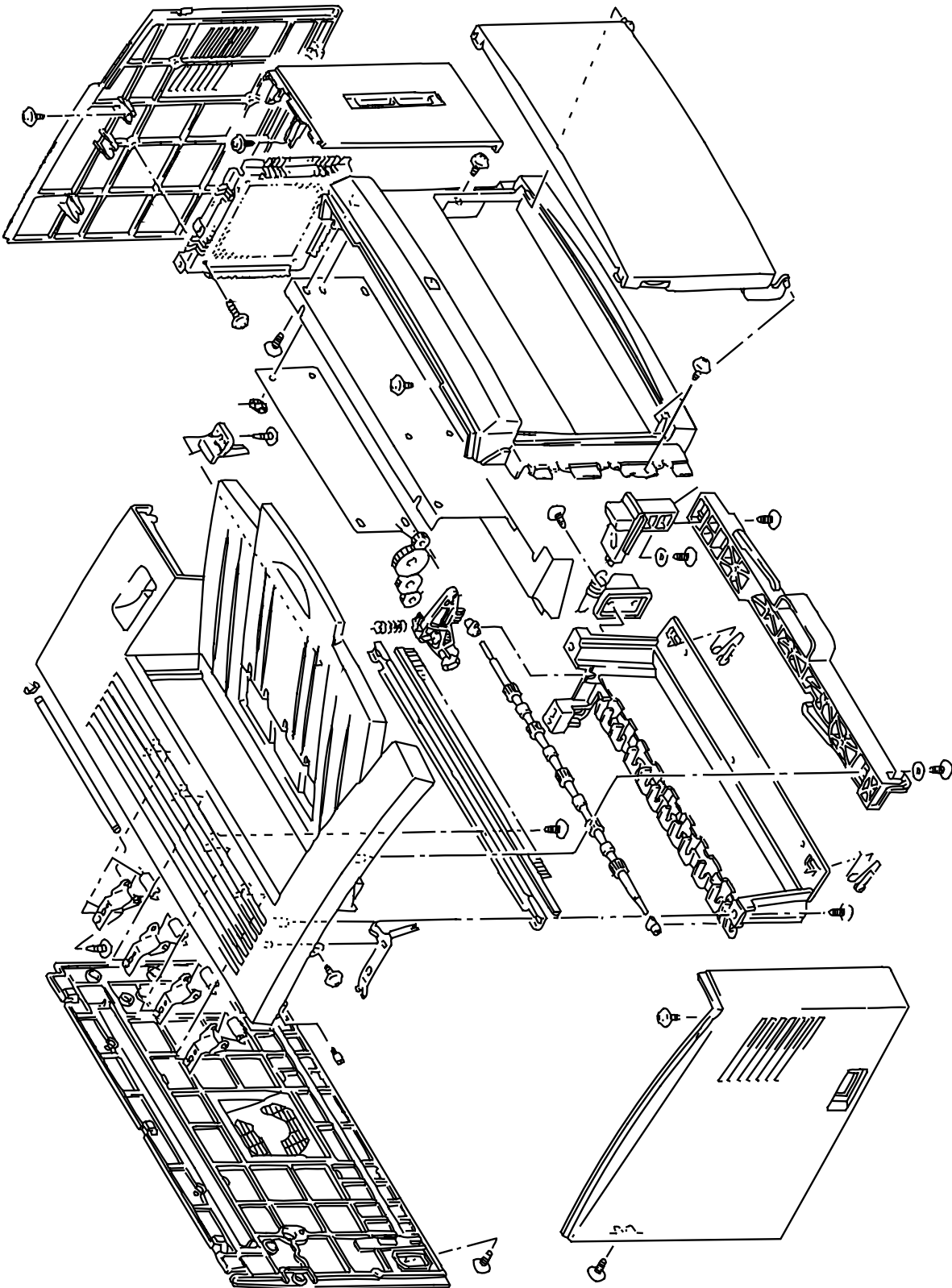


Figure A-2. Housing

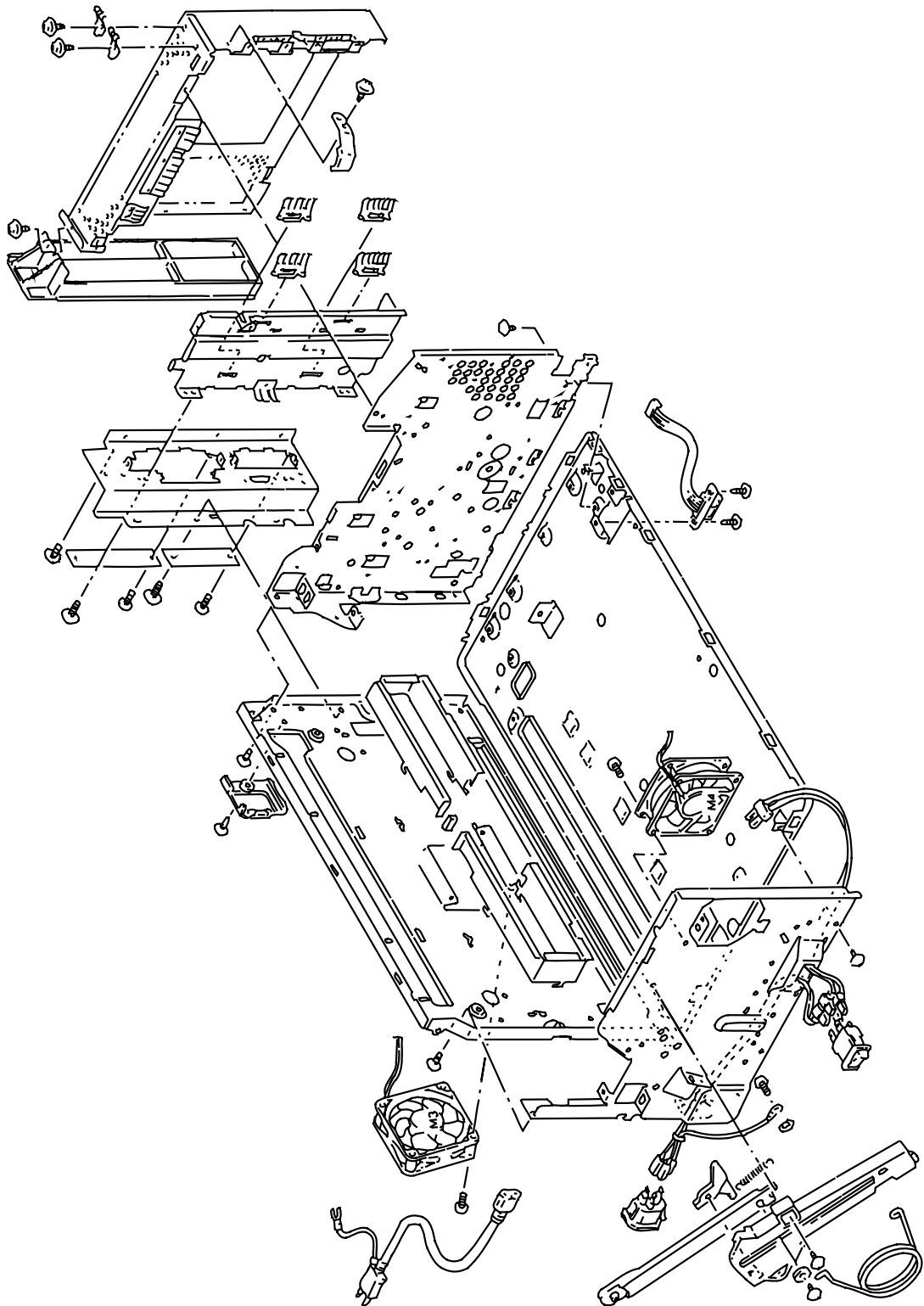


Figure A-3. Frames

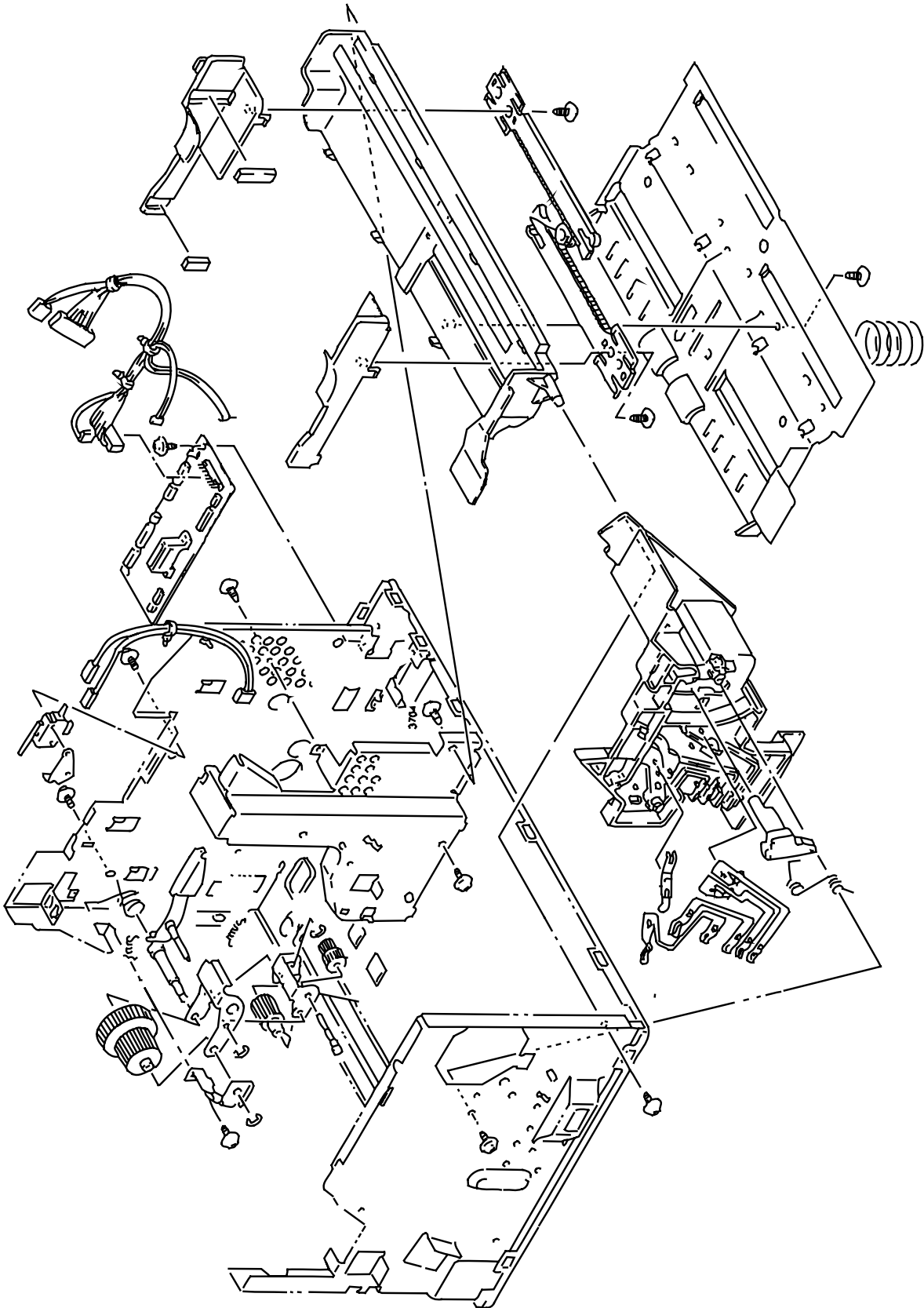


Figure A-4. Paper Takeup Section (1)

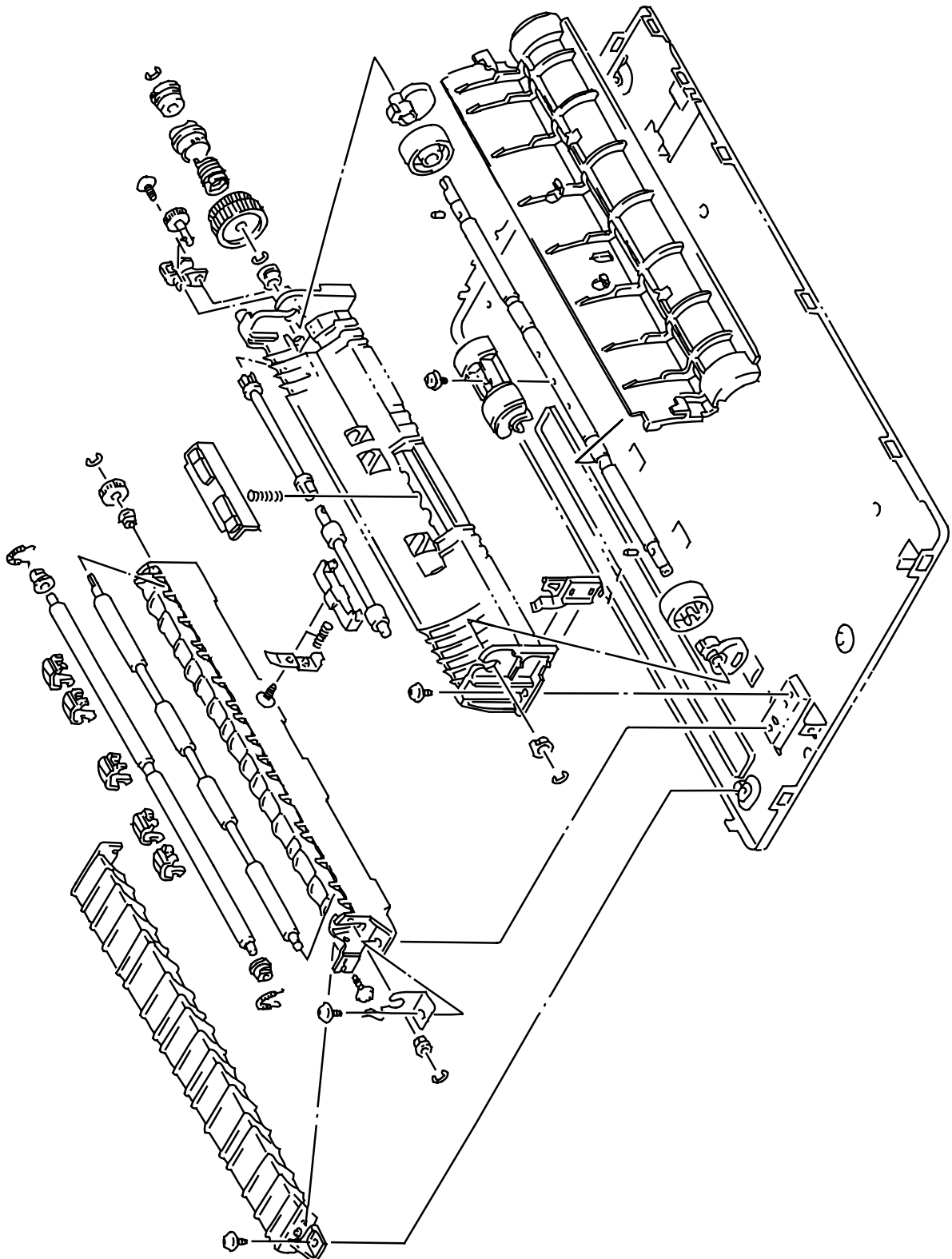


Figure A-5. Paper Takeup Section (2)

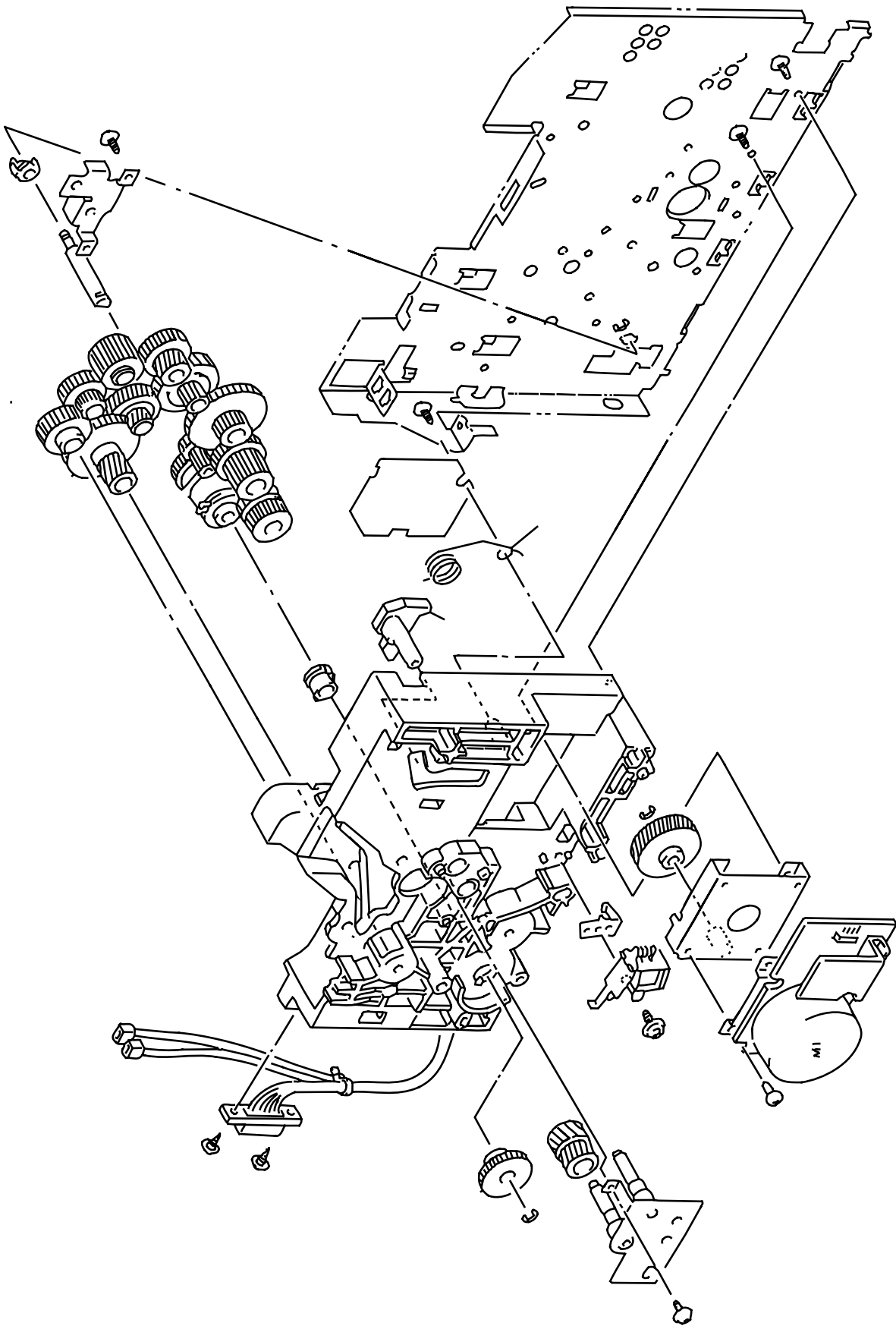


Figure A-6. Drive Unit

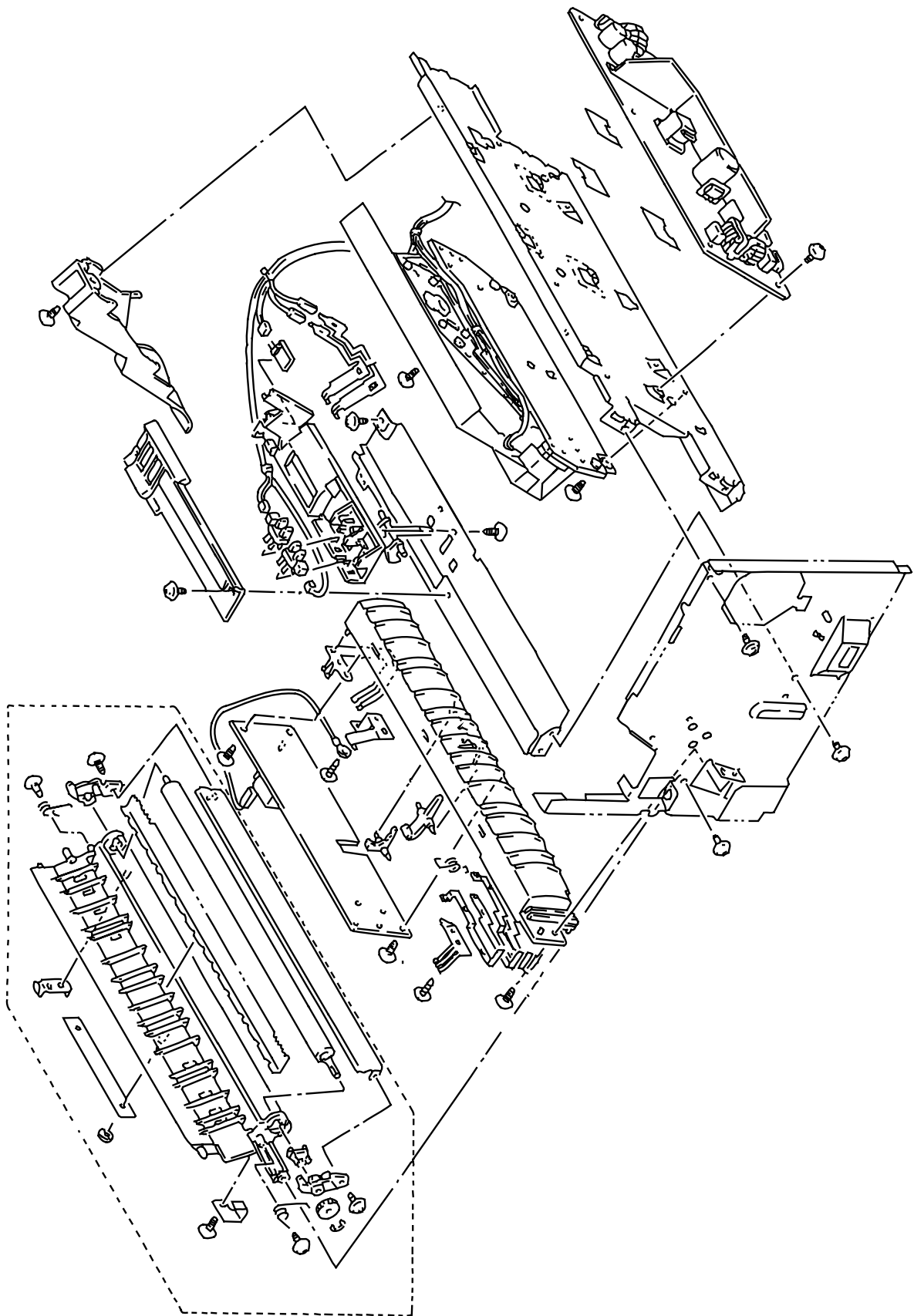


Figure A-7. Transfer Unit

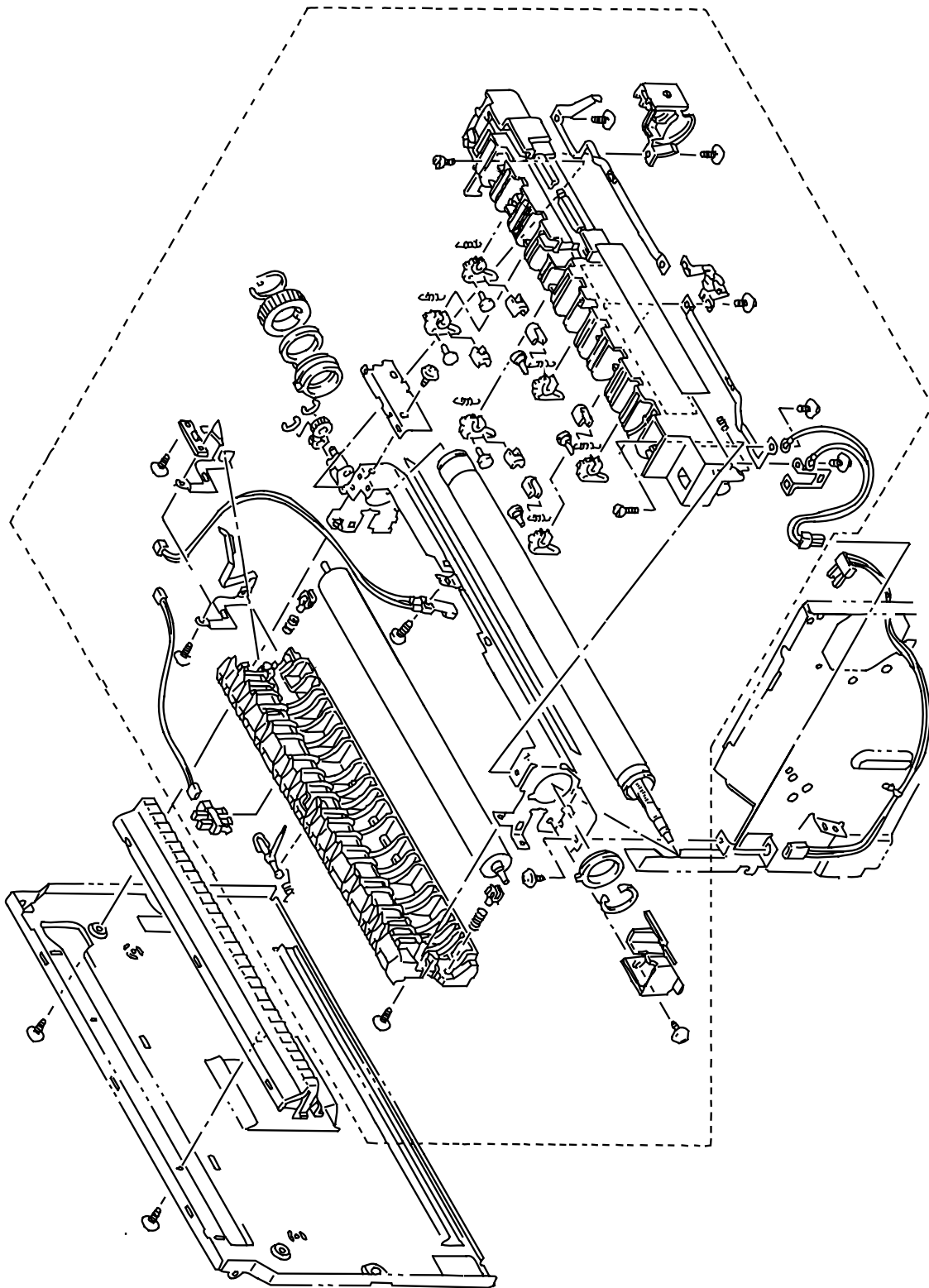


Figure A-8. Fusing Unit

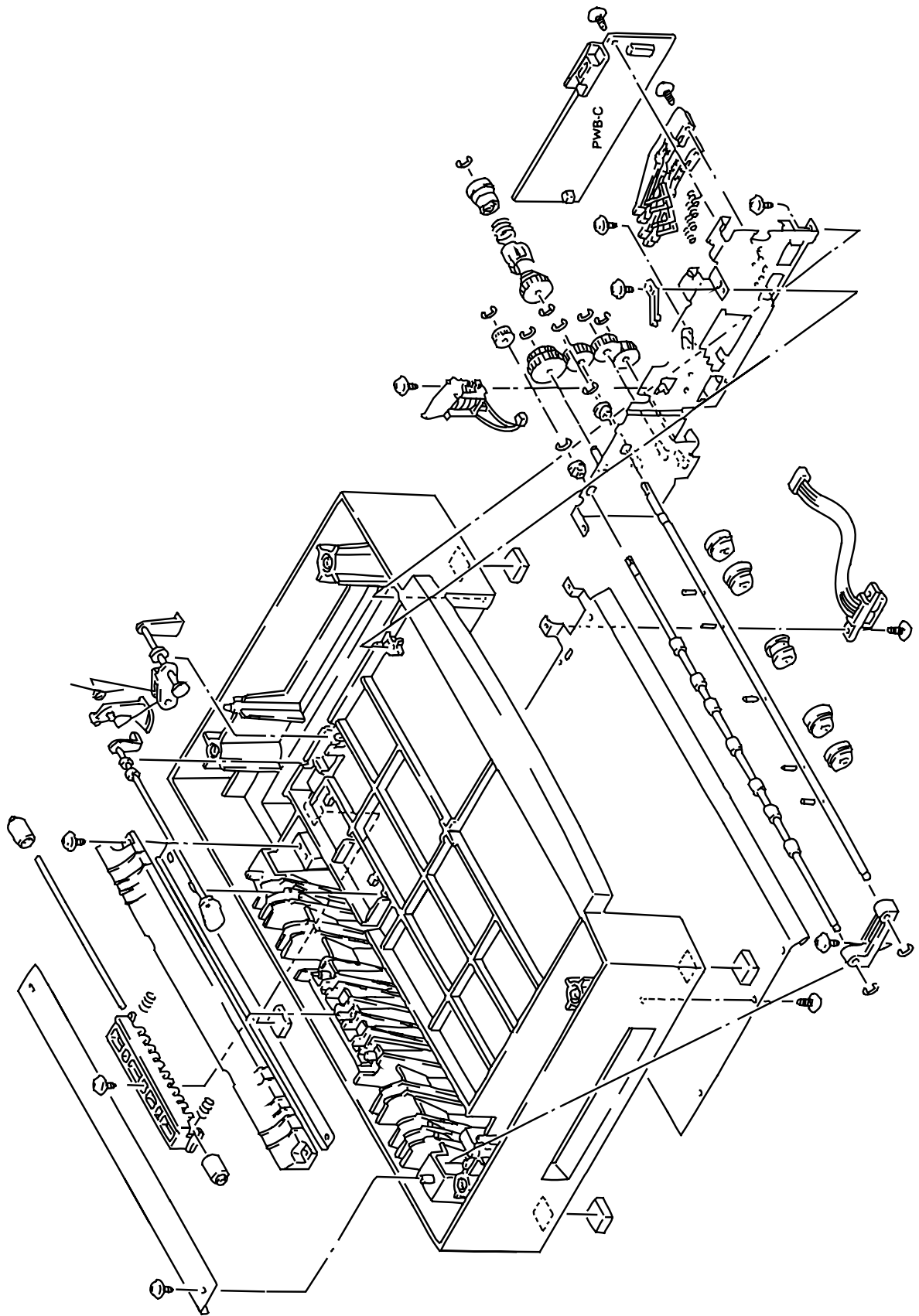


Figure A-9. Paper Cassette Unit

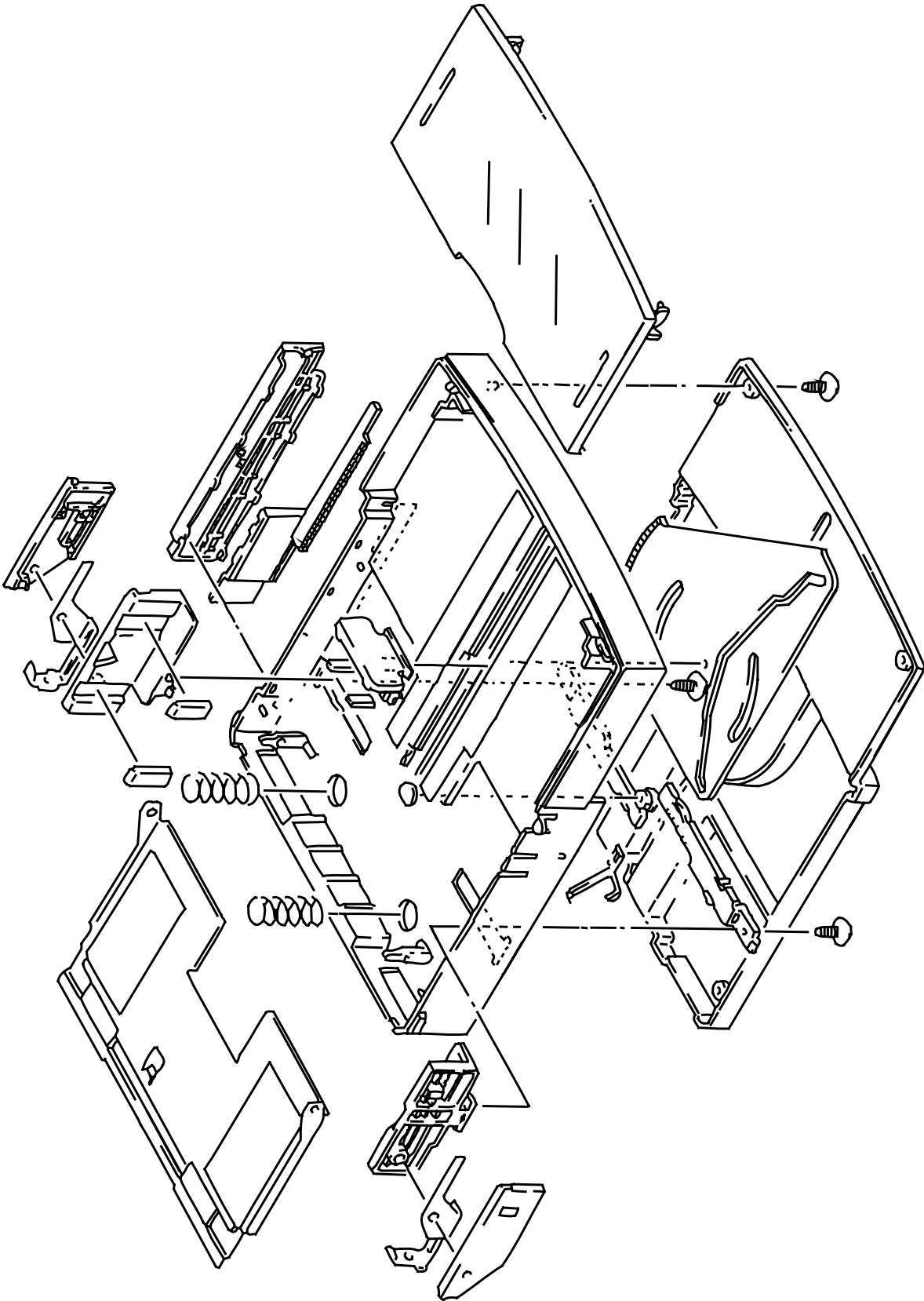


Figure A-10. Lower Paper Cassette (Standard)

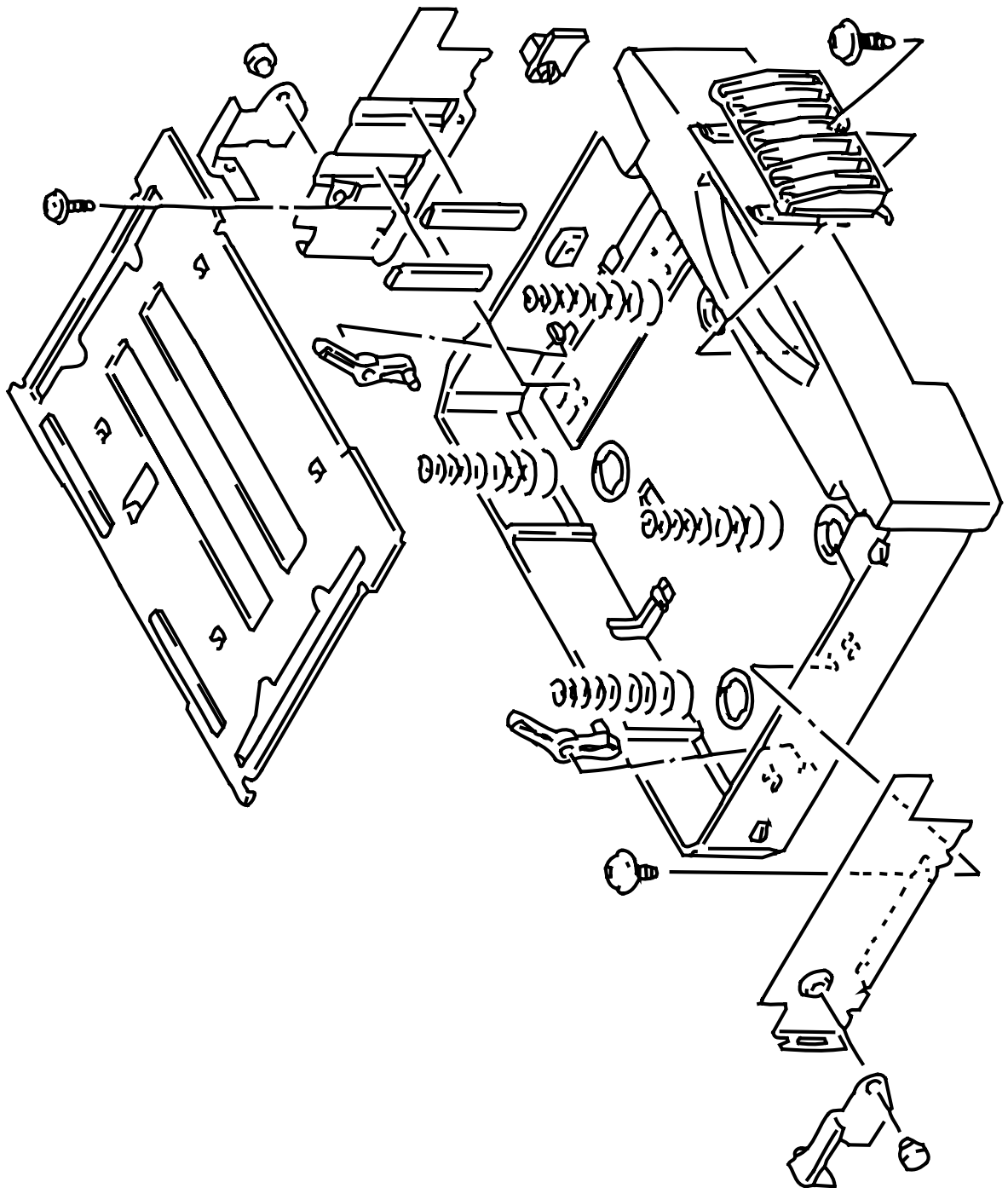


Figure A-11. Lower Paper Cassette (Optional)

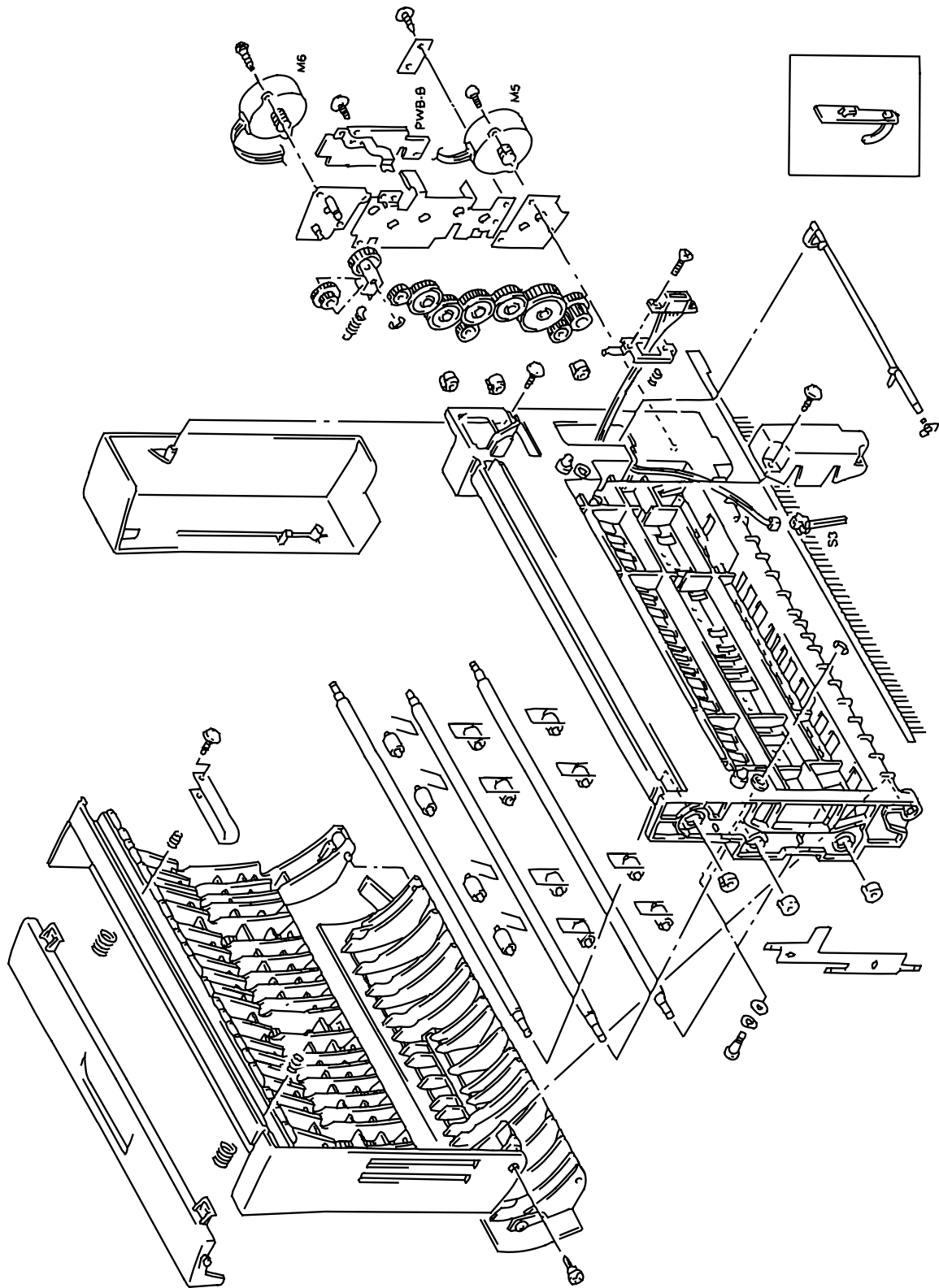


Figure A-12. Optional Duplex Unit

A.3 CIRCUIT BOARD COMPONENT LAYOUT

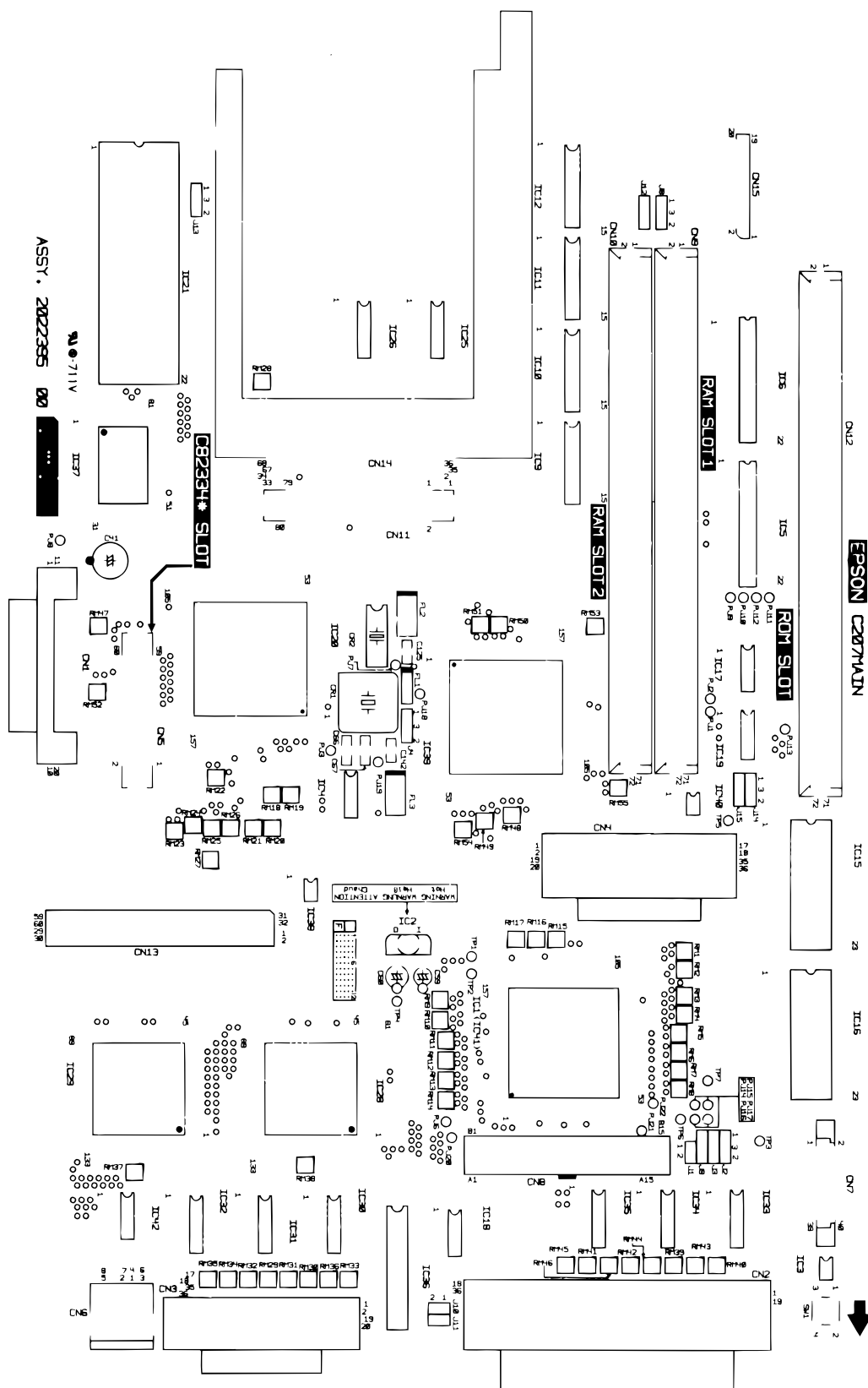


Figure A-13. C202 MAIN Board Component Layout (Front)



Figure A-14. C207 MAIN Board Component Layout (Rear)

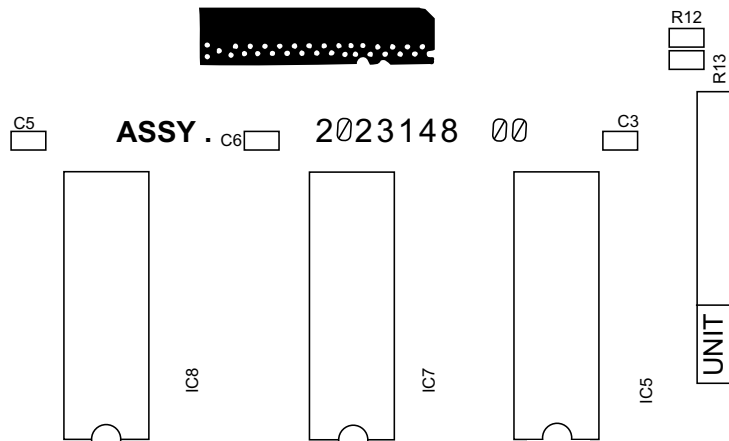
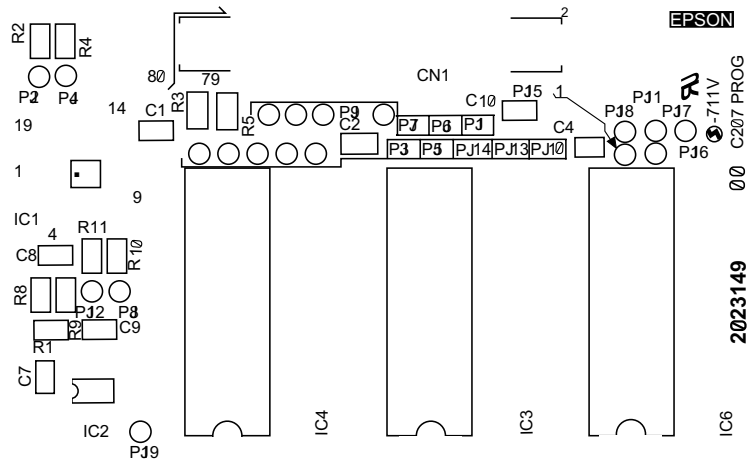


Figure A-15. C207 MAIN Board PROG Component Layout

A.4 CIRCUIT DIAGRAMS

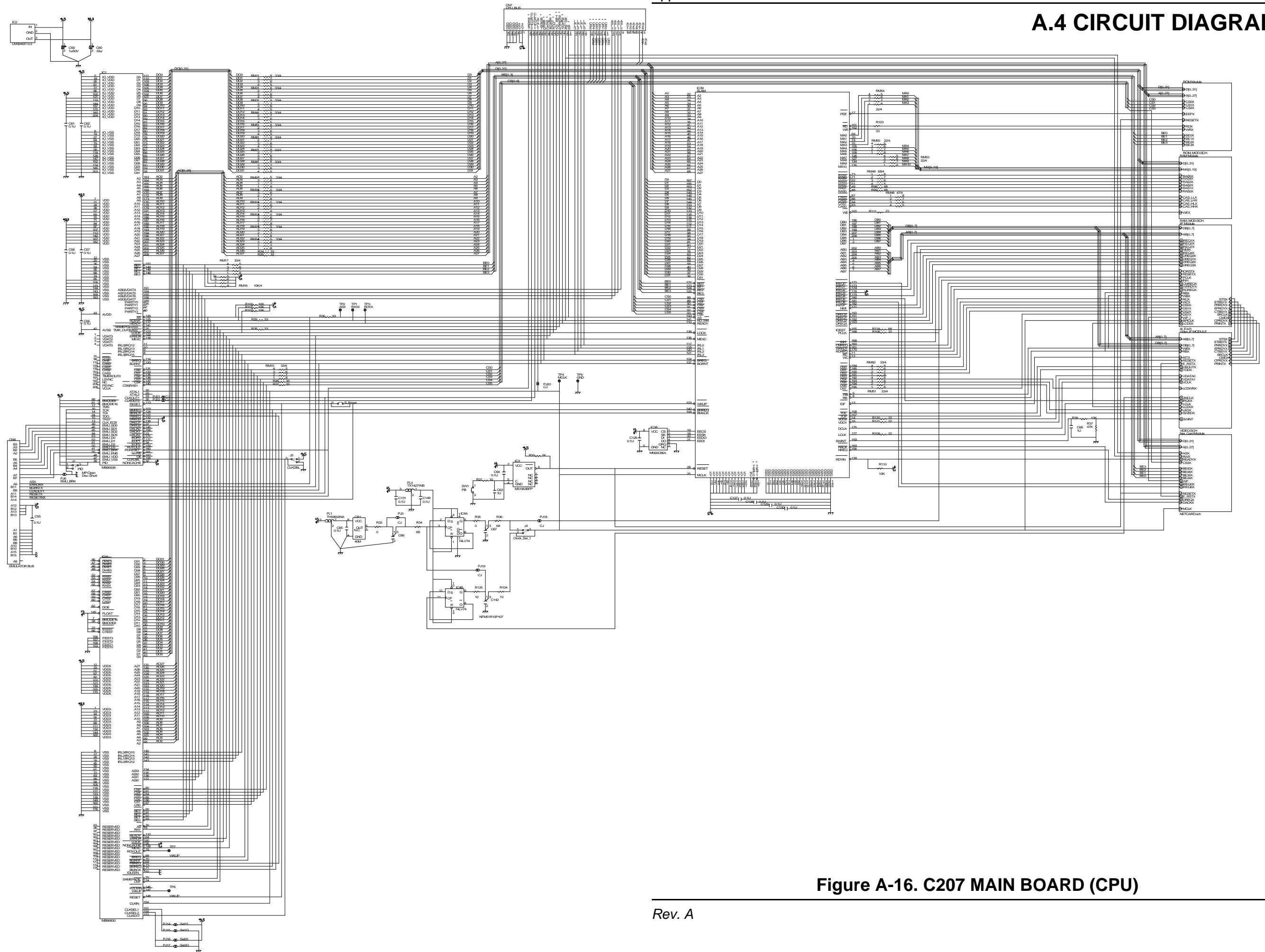


Figure A-16. C207 MAIN BOARD (CPU)

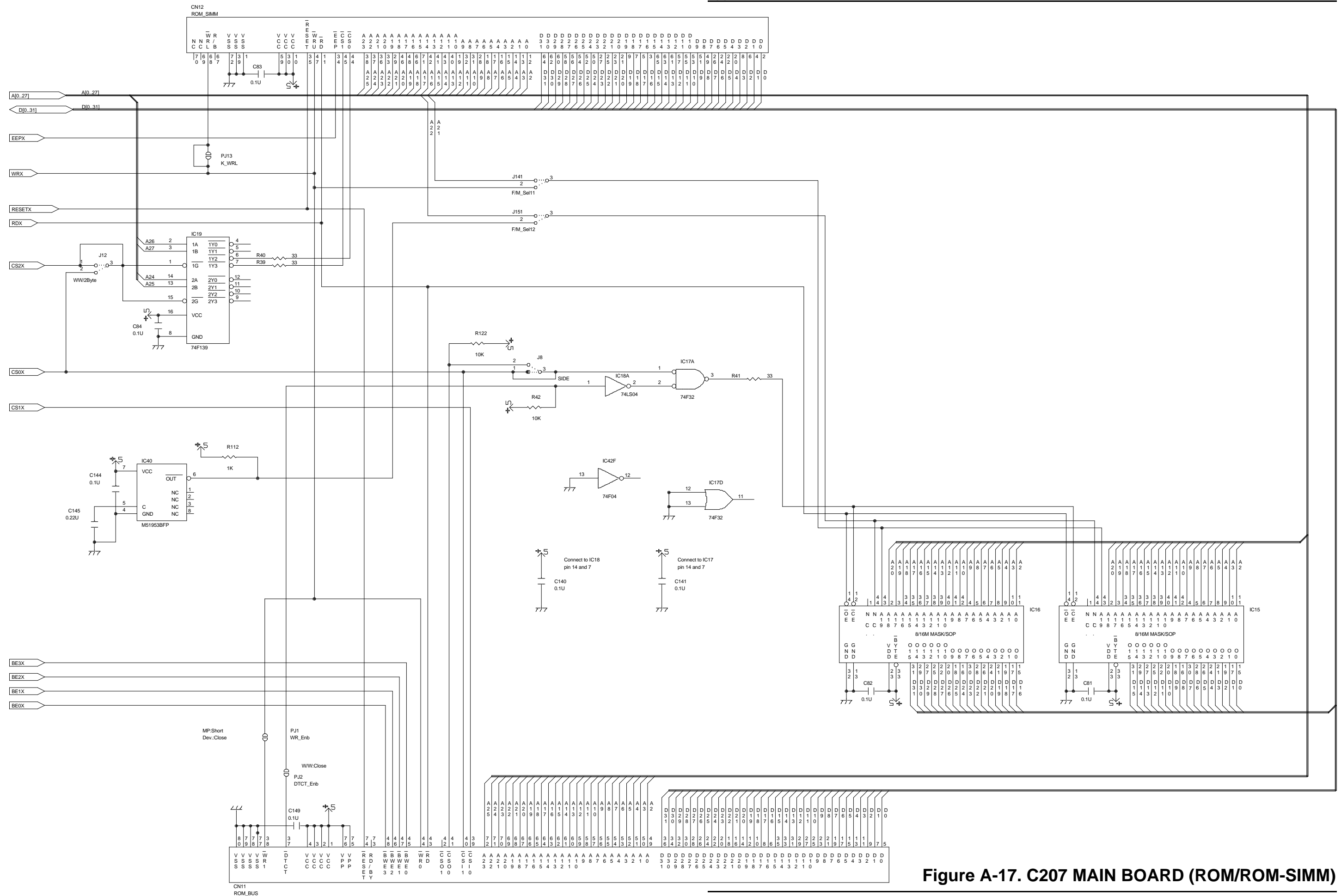


Figure A-17. C207 MAIN BOARD (ROM/ROM-SIMM)

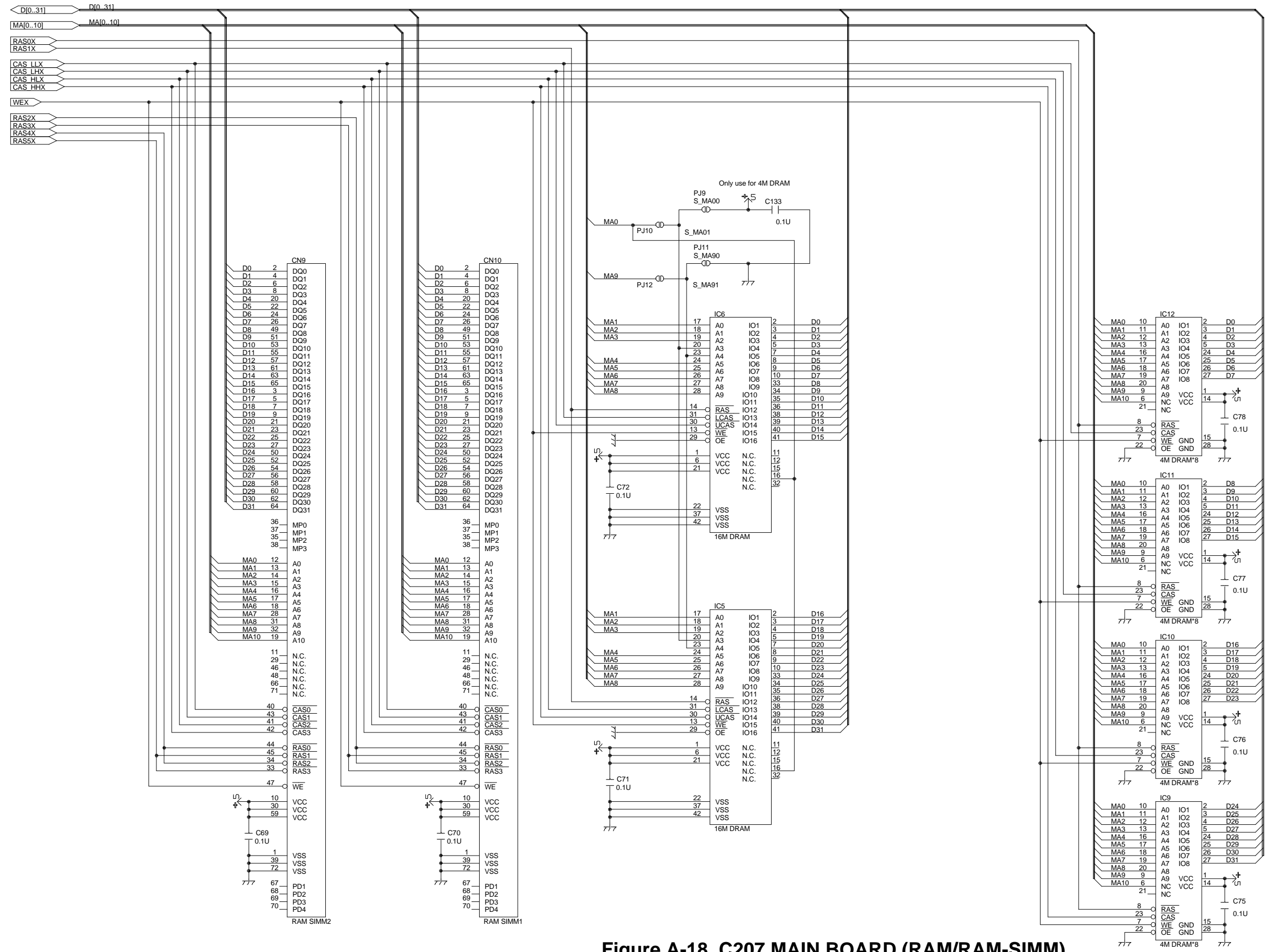


Figure A-18. C207 MAIN BOARD (RAM/RAM-SIMM)

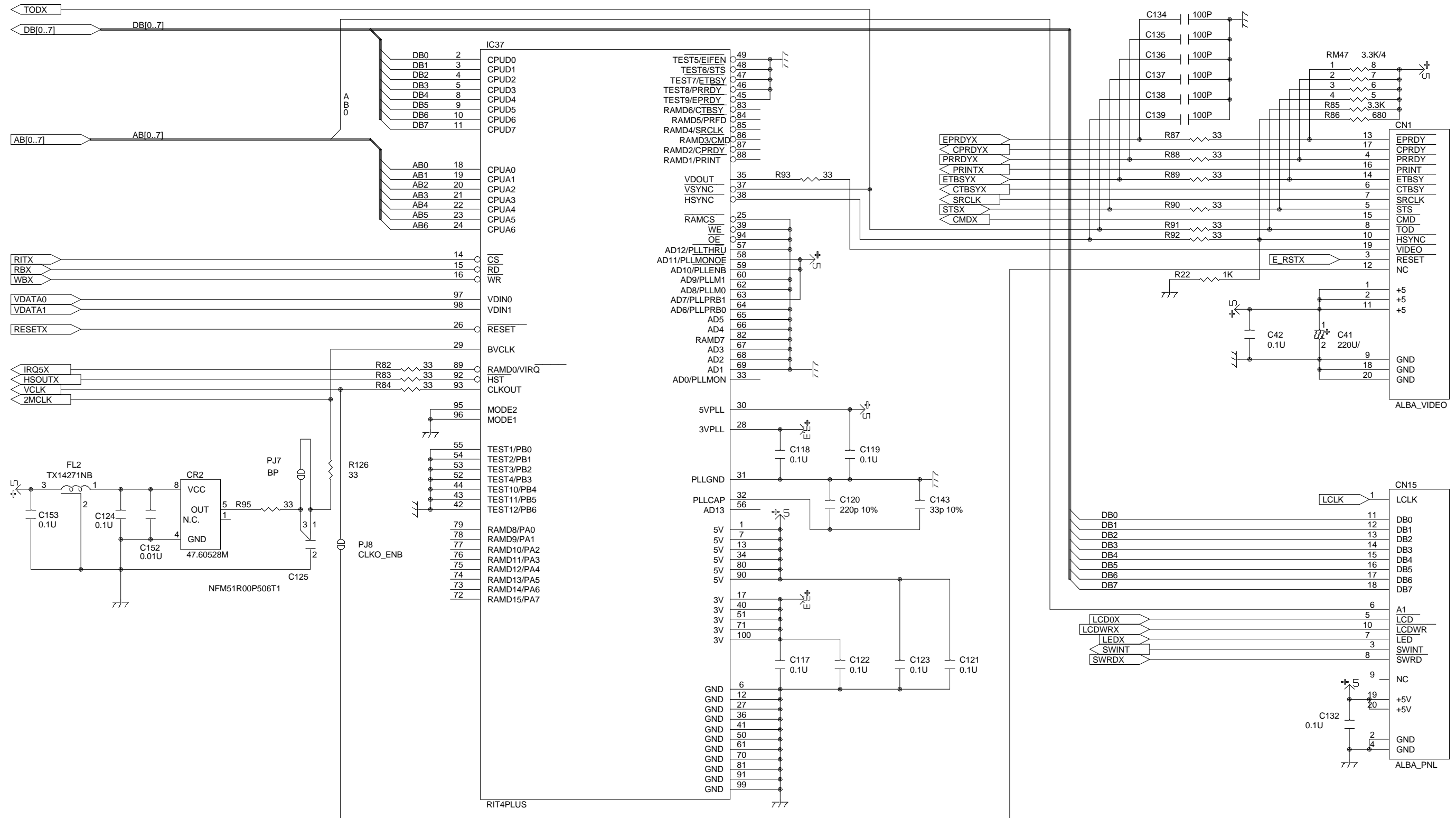


Figure A-20. C207 MAIN BOARD (Video I/F)

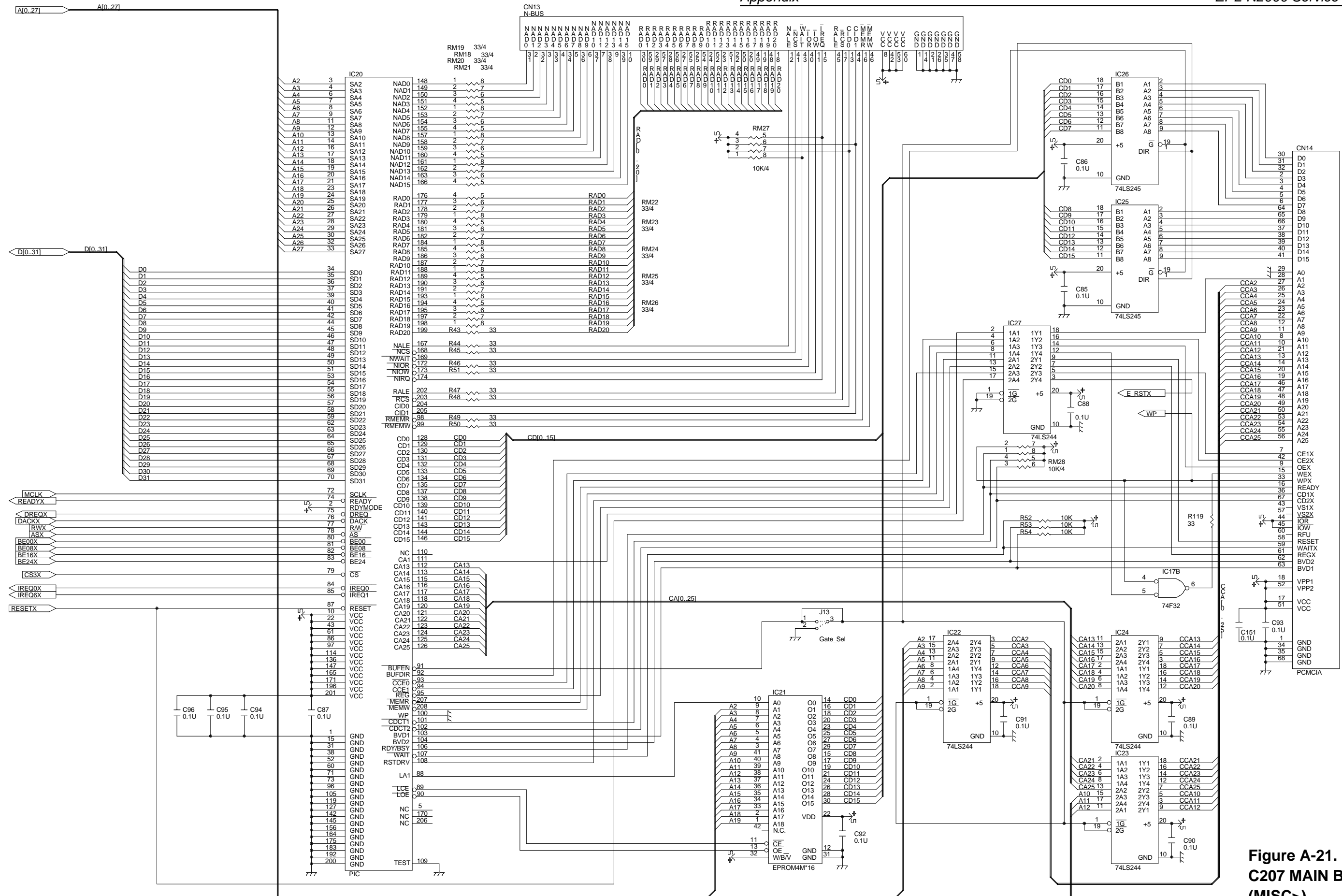


Figure A-21. C207 MAIN BOARD (MISC)

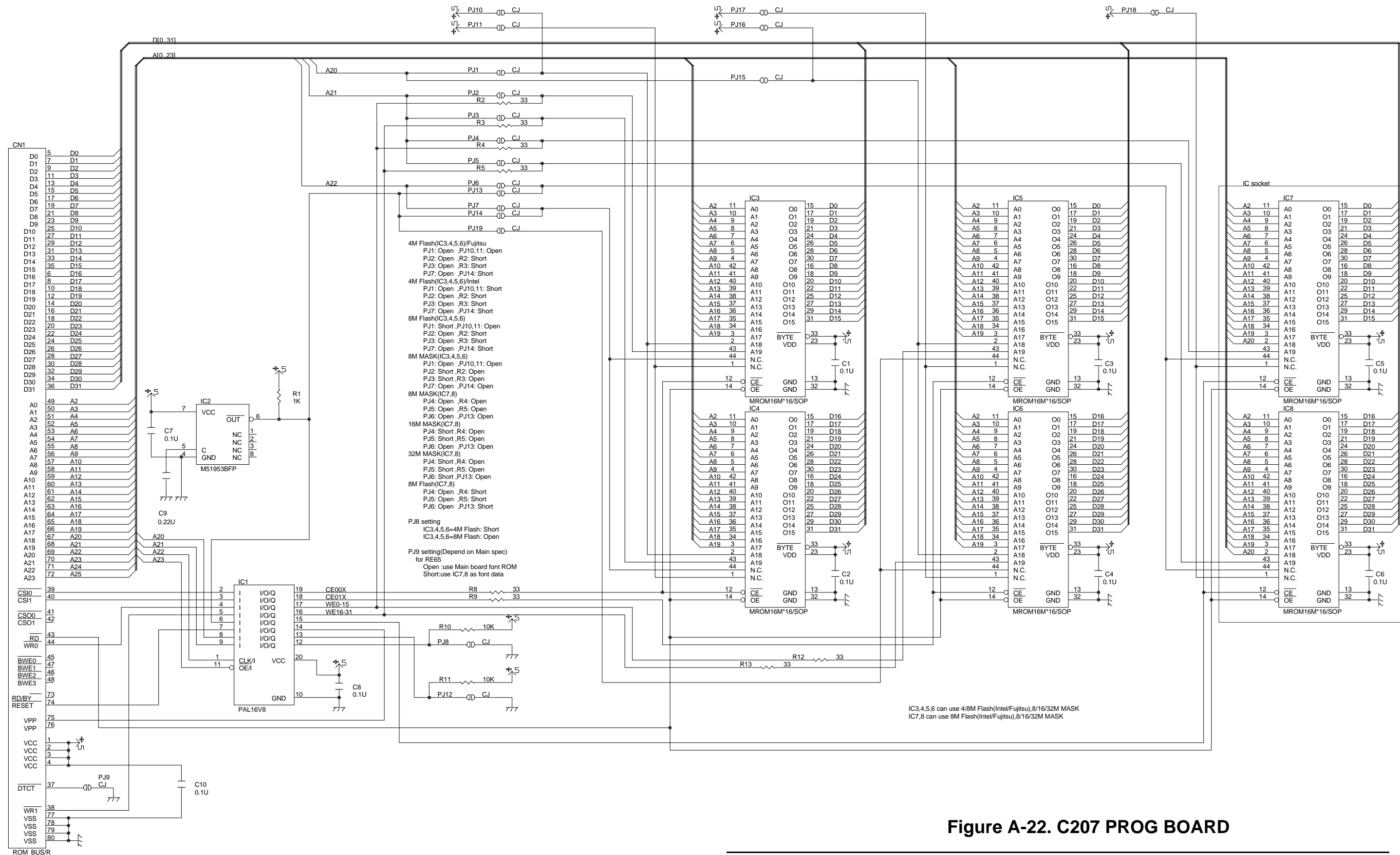


Figure A-22. C207 PROG BOARD

EPSON